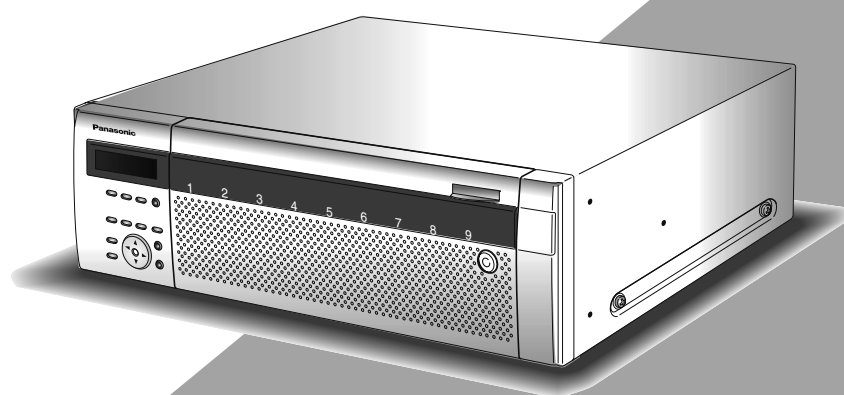


Panasonic

Network Disk Recorder Installation Guide

Model No. **WJ-ND400**



Before attempting to connect or operate this product,
please read these instructions carefully and save this manual for future use.

We declare under our sole responsibility that the product to which this declaration relates is in conformity with the standards or other normative documents following the provisions of Directives 2006/95/EC and 2004/108/EC.

Wir erklären in alleiniger Verantwortung, daß das Produkt, auf das sich diese Erklärung bezieht, mit der folgenden Normen oder normativen Dokumenten übereinstimmt. Gemäß den Bestimmungen der Richtlinie 2006/95/EC und 2004/108/EC.

WARNING:

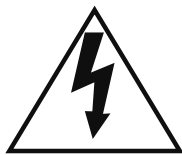
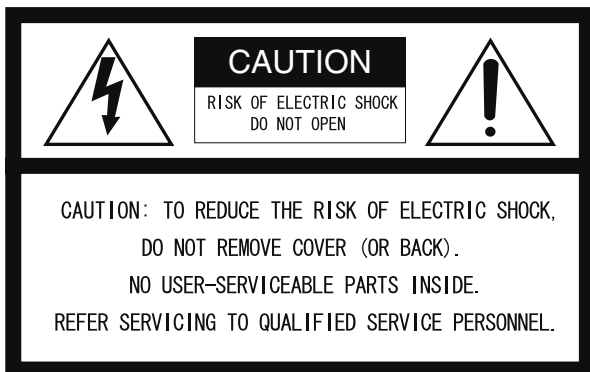
- This apparatus must be earthed.
- Apparatus shall be connected to a main socket outlet with a protective earthing connection.
- The mains plug or an appliance coupler shall remain readily operable.
- To prevent fire or electric shock hazard, do not expose this apparatus to rain or moisture.
- The apparatus should not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, should be placed on the apparatus.
- All work related to the installation of this product should be made by qualified service personnel or system installers.
- The connections should comply with local electrical code.

CAUTION:

Before attempting to connect or operate this product, please read the label on the bottom.

CAUTION:

An ALL-POLE MAINS SWITCH with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Power disconnection. Unit with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON-OFF switch is in the ON position. Unplug the power cord to disconnect the main power for all units.

Nous déclarons sous notre seule responsabilité que le produit auquel se réfère la présente déclaration est conforme aux normes ou autres documents normatifs conformément aux dispositions des directives 2006/95/CE et 2004/108/CE.

Nosotros declaramos bajo nuestra única responsabilidad que el producto a que hace referencia esta declaración está conforme con las normas u otros documentos normativos siguiendo las estipulaciones de las directivas 2006/95/CE y 2004/108/CE.

Noi dichiariamo sotto nostra esclusiva responsabilità che il prodotto a cui si riferisce la presente dichiarazione risulta conforme ai seguenti standard o altri documenti normativi conformi alle disposizioni delle direttive 2006/95/CE e 2004/108/CE.

Wij verklaren als enige aansprakelijke, dat het product waarop deze verklaring betrekking heeft, voldoet aan de volgende normen of andere normatieve documenten, overeenkomstig de bepalingen van Richtlijnen 2006/95/EC en 2004/108/EC.

Vi erklærer os eneansvarlige for, at dette produkt, som denne deklaration omhandler, er i overensstemmelse med standarder eller andre normative dokumenter i følge bestemmelserne i direktivene 2006/95/EC og 2004/108/EC.

Vi deklarerar härmed vårt fulla ansvar för att den produkt till vilken denna deklaration hänvisar är i överensstämmelse med standarddokument, eller andra normativa dokument som framställs i direktiv nr. 2006/95/EC och 2004/108/EC.

Ilmoitamme yksinomaisella vastuullamme, että tuote, jota tämä ilmoitus koskee, noudattaa seuraavia standardeja tai muita ohjeellisia asiakirjoja, jotka noudattavat direktiivien 2006/95/EC ja 2004/108/EC säädöksiä.

Vi erklærer oss alene ansvarlige for at produktet som denne erklæringen gjelder for, er i overensstemmelse med følgende normer eller andre normgivende dokumenter som følger bestemmelsene i direktivene 2006/95/EC og 2004/108/EC.

For U.K.

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 5 amp fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amp and that it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark  or the BSI mark  on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY. THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt please consult a qualified electrician.

WARNING: This apparatus must be earthed.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code.

Green-and-yellow:	Earth
Blue:	Neutral
Brown:	Live

As the colours of the wire in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

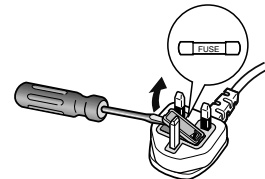
The wire which is coloured **green-and-yellow** must be connected to the terminal in the plug which is marked with the letter **E** or by the earth symbol  or coloured **green** or **green-and-yellow**.

The wire which is coloured **blue** must be connected to the terminal in the plug which is marked with the letter **N** or coloured **black**.

The wire which is coloured **brown** must be connected to the terminal in the plug which is marked with the letter **L** or coloured **red**.

How to replace the fuse

Open the fuse compartment with a screwdriver and replace the fuse and fuse cover.



For U.S.A.

The model number and serial number of this product may be found in the unit. You should note the model number and serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. _____

Serial No. _____

For Canada

This Class A digital apparatus complies with Canadian ICES-003.

For U.S.A.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Limitation of Liability

THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THE THIRD PARTY'S RIGHT.

THIS PUBLICATION COULD INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. CHANGES ARE ADDED TO THE INFORMATION HEREIN, AT ANY TIME, FOR THE IMPROVEMENTS OF THIS PUBLICATION AND/OR THE CORRESPONDING PRODUCT (S).

Disclaimer of Warranty

IN NO EVENT SHALL MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD. BE LIABLE TO ANY PARTY OR ANY PERSON, EXCEPT FOR REPLACEMENT OR REASONABLE MAINTENANCE OF THE PRODUCT, FOR THE CASES, INCLUDING BUT NOT LIMITED TO BELOW:

- (1) ANY DAMAGE AND LOSS, INCLUDING WITHOUT LIMITATION, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL OR EXEMPLARY, ARISING OUT OF OR RELATING TO THE PRODUCT;
- (2) PERSONAL INJURY OR ANY DAMAGE CAUSED BY INAPPROPRIATE USE OR NEGLIGENT OPERATION OF THE USER;
- (3) UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER;
- (4) INCONVENIENCE OR ANY LOSS ARISING WHEN IMAGES ARE NOT DISPLAYED, DUE TO ANY REASON OR CAUSE INCLUDING ANY FAILURE OR PROBLEM OF THE PRODUCT;

- (5) ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED BY THE DEVICES OF THIRD PARTY;
- (6) ANY CLAIM OR ACTION FOR DAMAGES, BROUGHT BY ANY PERSON OR ORGANIZATION BEING A PHOTOGENIC SUBJECT, DUE TO VIOLATION OF PRIVACY WITH THE RESULT OF THAT SURVEILLANCE-CAMERA'S PICTURE, INCLUDING SAVED DATA, FOR SOME REASON, BECOMES PUBLIC OR IS USED FOR THE PURPOSE OTHER THAN SURVEILLANCE;
- (7) LOSS OF REGISTERED DATA CAUSED BY ANY FAILURE.

Important Safety Instructions

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



- 13) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

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Preface

The Network Disk Recorder (WJ-ND400) is for recording images and audio from network surveillance cameras to a hard disk (hereafter HDD). It is possible to connect up to 64 cameras over a network.

Also, it is possible to access and operate the recorder via a network from the web browser on a computer (hereafter PC). A maximum of 16 PCs can be connected (via a network).

- The network settings for the PC need to be done to do settings and operations from the PC. A web browser must also be installed.

About these Operating Instructions

There are four manuals, they include the Installation Guide, Setup Instructions (PDF file), Operating Instructions (PDF file), and the Quick Reference Guide.

- | | |
|-------------------------------------|--|
| • Installation Guide | : How to configure required settings and connect the equipment. |
| • Setup Instructions (PDF file) | : How to configure required settings and connect the equipment to perform operations from a PC over a network. |
| • Operating Instructions (PDF file) | : How to perform operations from a PC. |
| • Quick Reference Guide | : Basic settings and frequently used functions. |

Adobe® Reader is required to read the “Operating Instructions” and the “Setup Instructions” on the provided CD-ROM. When the Adobe® Reader is not installed on the PC, download the latest Adobe® Reader from the Adobe web site and install it.

In this manual and on the screen, the ND400 and the recorder are shown as WJ-ND400.

Refer to the "readme.txt" file on the CD-ROM bundled with the recorder for information about the versions and types of separately available software and cameras supported.

The following abbreviations are used in this document.

Microsoft® Windows Vista® Business (32-bit) is called Windows Vista®.

Microsoft® Windows® XP Professional SP2, and Microsoft® Windows® XP Home Edition SP2 are called Windows® XP.

System Requirements for a PC

It is recommended to operate this unit using a PC that meets the following system requirements.

- OS : Microsoft® Windows Vista® Business (32-bit)
: Microsoft® Windows® XP Professional SP2*
: Microsoft® Windows® XP Home Edition SP2*
- OS Language : English, French, Spanish, German, Italian, Russian, Chinese
- CPU : Pentium® 4 3.0 GHz or faster
- Memory : 1 GB or more (512 MB or more is required when using Microsoft® Windows® XP.)
- Monitor : Resolution: 1 024 x 768 pixels or more
Color: 24-bit True color or better
- Network interface : 10/100/1 000 Mbps Ethernet port x1
- Web Browser : Windows® Internet Explorer® 7.0
: Microsoft® Internet Explorer® 6.0 SP2*
- Audio interface : Sound card (when using the audio function)
- Other : CD-ROM drive: It is necessary to read the operating instructions and use the software on the provided CD-ROM.
: DirectX® 9.0c or later
: Adobe® Reader®: It is necessary to read the operating instructions on the provided CD-ROM.

* Microsoft® Internet Explorer® 6.0 SP2 is required when using Microsoft® Windows® XP Professional SP2 or Microsoft® Windows® XP Home Edition SP2.

Important:

- When using a PC that does not meet the above requirements, displaying of images may become slow or the web browser may become inoperable.
- Audio may not be heard if a sound card is not installed on a PC. Audio may be interrupted depending on the network environment.
- Refer to "Notes on Vista™" (PDF) for further information about system requirements for a PC and precautions when using Microsoft® Windows Vista®.

Trademarks and Registered Trademarks

- Adobe Reader is a trademark or registered trademark of Adobe Systems Incorporated in the USA and other countries.
- Microsoft, Windows, Windows Vista, Internet Explorer, ActiveX and Direct X are trademarks or registered trademarks of Microsoft Corporation in the USA and other countries.
- Intel and Pentium are trademarks or registered trademarks of Intel Corporation and its subsidiaries in the USA and other countries.
- RSA is a registered trademark of RSA Security Inc. BSAFE is a registered trademark of RSA Security in the USA and other countries.
- Other names of companies and products contained in these operating instructions may be trademarks or registered trademarks of their respective owners.

Network Security

As you will use this product connected to a network, your attention is called to the following security risks.

1. Leakage or theft of information through this product
2. Use of this product for illegal operations by persons with malicious intent
3. Interference with or stoppage of this product by persons with malicious intent

It is your responsibility to take precautions such as those described below to protect yourself against the above network security risks.

- Use this product in a network secured by a firewall, etc.
- If this product is connected to a network that includes PCs, make sure that the system is not infected by computer viruses or other malicious entities (using a regularly updated anti-virus program, anti-spyware program, etc.).
- Protect your network against unauthorized access by restricting users to those who log in with an authorized user name and password.
- Apply measures such as user authentication to protect your network against leakage or theft of information, including image data, authentication information (user names and passwords), alarm mail information, FTP server information and DDNS server information.

Precautions

- **Refer all work related to the installation of this product to qualified service personnel or system installers.**

- **Do not operate the unit beyond their its specified temperature, humidity, or power source ratings.**

Use the unit at temperatures between +5 °C - +45 °C {41 °F - 113 °F} and where the humidity is between 5 % - 90 %.

The input power source for NTSC model is 120 V AC 60 Hz, for PAL model is 220 V - 240 V AC 50 Hz.

Performance and lifetime of hard disk drives are easily affected by heat (used at high temperature) characteristically. It is recommended to use this unit at temperatures between +20 °C - +30 °C {68 °F - 86 °F}.

- **POWER switch**

The POWER switch is located on the rear of the unit. Even though the POWER switch is set to "OFF", the power supply will not be cut. To cut the power supply, unplug the power plug of the unit from the AC outlet. When using the power supply control unit, turn off the power of the power supply control unit.

- **Built-in backup battery**

Before the first use, charge the built-in backup battery (lithium battery) by turning on the power for 48 hours or more.

If it is not charged enough, in a case where the power goes down, the internal clock may keep bad time or the operative condition may be different to that before the electric power failure.

The built-in battery life is approximately 5 years as an indication of replacement. (This is just an indication of replacement. We are not providing any guarantee of the built-in battery lifetime. Replacement cost of the built-in battery is not covered by the warranty even if it needs to be done within the warranty period.) Ask the dealer where you purchased the unit when replacement of the battery is required.

- **Hard disk drives**

Hard disk drives are vulnerable to vibration. Handle them with care.

It is possible to damage them if they are moved while their motors are still running. Do not move them just after turning their power on or off (for around 30 seconds).

- A lifetime of hard disk drives is limited by use.

It is recommended to replace them after around 18 000 hours of operation to prevent data loss from disk failures.

Write error may occur frequently after around 20 000 hours of operation and the head and motor deterioration may occur and will reach their lifetime after 30 000 hours of operation when they have been used at the recommended ambient temperature (approx. +25 °C {77 °F}).

When hard disk drive trouble occurs, replace it immediately. Consult your dealer for servicing.

- Hard disk drives are precise devices. Do not leave them where the temperature is high and humid.
- Do not touch the connector of the removable hard disk by hand directly to protect the hard disk drive from static electricity.
- Take notice of the following for the removed hard disks.
 - Do not leave them where the temperature is high and humid. It may cause condensation.
 - Place them where the temperature is between 0 °C {32 °F} and 30 °C {86 °F} and humidity is between 20 - 40 % when they are not used for a long time (six months or more). Consult your dealer for further information.
 - Operate them for around an hour at least once every six months when they are not used for a long time.
 - When placing them stacked, do not stack more than four disks.

- **Heat dissipation**

Refer to the following to prevent fire and malfunction of the unit.

- Do not block the ventilation openings in the cover to prevent the unit from overheating. Maintain the unit periodically to prevent dust from blocking openings.
- Clear a space of more than 5 cm {1.97 "} from both sides, the top, and the rear of the unit.
- A lifetime of the cooling fan is limited by use.

- **Grounding**

Confirm that the wire is connected from the SIGNALGND terminal to earth ground.

A grounding connection must be made before connecting the power plug of the unit to the main power supply.

When disconnecting the grounding wire, make sure that the power plug of the unit is disconnected from the main power supply.

- **Avoid placing the unit near noise sources**

If the unit is placed near noise sources such as fluorescent lamps, noises may be produced. In this case, rewire avoiding the noise sources, or move the unit to the place far from them.

- **Places to avoid**

Do not place the unit in the following places:

- Places exposed to direct sunlight
- Places subject to having strong vibration or impact
- Near magnetic field sources such as a television or speakers
- Place where condensation forms easily, where temperature changes greatly, humid places
- Steamy and oily places such as kitchens
- Places which are not level

- **Cleaning**

Turn the power off when cleaning the unit. Otherwise it may cause injuries.

Do not use strong or abrasive detergents when cleaning the unit body.

Use a dry cloth to clean the unit when it is dirty.

When the dirt is hard to remove, use a mild detergent and wipe gently.

- **Indication label**

Refer to the indication label placed on the surface of the unit as to the indications of equipment classification and power source, etc.

- **Handle the unit with care.**

Do not strike or shake, as this may damage the unit.

- **Do not strike or give a strong shock to the unit.**

It may cause damage or allow water to enter the unit.

- **Place the unit horizontally on a level surface.**

Do not place the unit in an upright position. When stacking multiple units, clear a space of more than 5 cm {1.97"} from both sides, the top, the bottom and the rear of the units.

- **Avoid placing receptacles that contain liquids such as water near the unit.**

If liquid spills onto the unit, it may cause fire or an electric shock.

- **Prevent condensation from forming on the surface of the hard disk.**

If this happens, do not turn on the power of the recorder and leave the recorder for around 2 hours.

Wait until the dew evaporates in any of the following cases:

- The recorder is placed in an extremely humid place.
- The recorder is placed in a room where a heater has just been turned on.
- The recorder is moved from an air-conditioned room to a humid and high-temperature room.
- When the unit has not been used for a certain period, turn on the power of the unit (approximately once a week), and perform recording/playback to prevent interferences with functions.
- We recommend that you make a note of your settings and save them. This will help when you are required to change the system configuration, or when unexpected trouble or failure occurs.
- Distributing, copying, disassembling, reverse compiling, reverse engineering, and also exporting in violation of export laws of the software provided with this product, is expressly prohibited.

- **MPEG-4 Visual patent portfolio license**

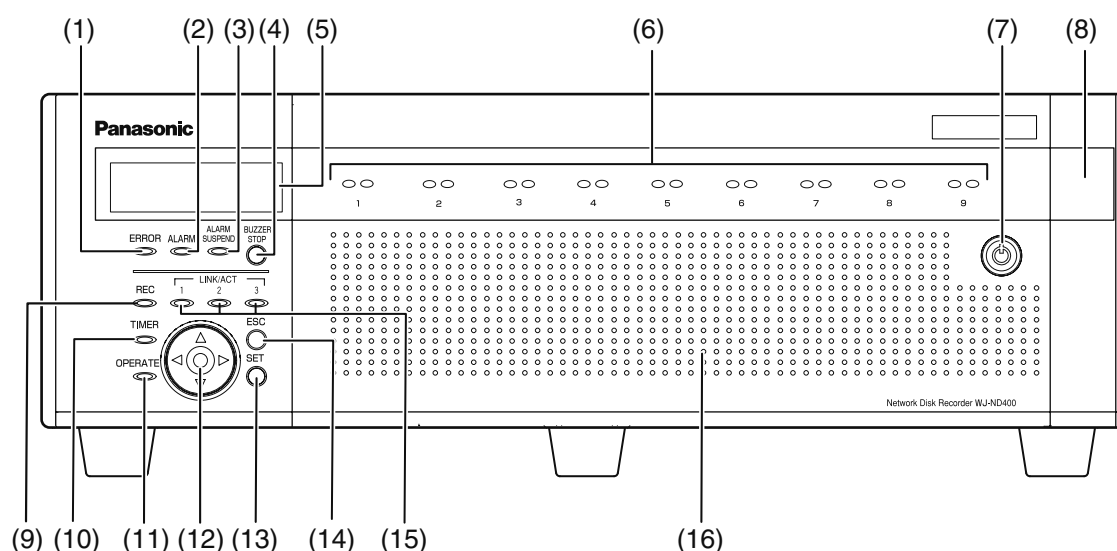
This product is licensed under the MPEG-4 Visual patent portfolio license for the personal and non-commercial use of a consumer for (i) encoding video in compliance with the MPEG-4 Visual Standard ("MPEG-4 Video") and/or (ii) decoding MPEG-4 Video that was encoded by a consumer engaged in a personal and non-commercial activity and/or was obtained from a video provider licensed by MPEG LA to provide MPEG-4 Video. No license is granted or shall be implied for any other use. Additional information including that relating to promotional, internal and commercial uses and licensing may be obtained from MPEG LA, LLC. See <http://www.mpegla.com>.

- **GPL/LGPL**

- This product includes software based on GNU General Public License (GPL) and a Lesser General Public License (LGPL).
- Customers can duplicate, distribute, and modify the source code of the relevant software according to the GPL and LGPL.
- For detailed information about the relevant software, refer to the "readme.txt" file in the "GPL/LGPL" folder on the CD-ROM included with the main unit.
- Please note that Panasonic cannot respond to questions regarding the source code.

Major Operating Controls and Their Functions

Front View



(1) Error indicator [ERROR]

Blinks when errors or problems with the recorder's operation occur.

- | | |
|---------------|--|
| Blinks red | : System errors |
| Blinks orange | : Temperature is too high or low.
Cooling fan stopped, etc. |

(2) Alarm indicator [ALARM]

- | | |
|--------|--|
| Blinks | : Alarm has occurred |
| Lights | : Alarm output stopped |
| Off | : Alarm is resolved or no alarm has occurred |

Refer to the Operating Instructions (PDF file) for more information about alarms.

(3) Alarm suspension indicator [ALARM SUSPEND]

- | | |
|--------|--------------------------|
| Lights | : Alarm suspend stopped |
| Off | : Alarm is not suspended |
- Refer to the Operating Instructions (PDF file) for more information about alarm suspension.

(4) Buzzer stop button [BUZZER STOP]

Use to turn off the buzzer after an alarm or error occurs.
Refer to the Operating Instructions (PDF file) for more information about alarms and errors.

(5) LCD

Displays the recorder's status (errors etc.) and functions that are operated using the buttons on the front panel.

(6) HDD indicators ("HDD1" to "HDD9")

HDD access indicator (right side)

Indicates the access status and problems of the HDD.
When errors occur on an HDD in RAID5/RAID6 mode, the indicator lights or blinks red.

- | | |
|--------------|---|
| Blinks green | : Accessing HDD |
| Off | : Not accessing HDD |
| Lights red | : Errors have occurred on the internal HDD
(Data can be recovered by replacing HDD.) |

- When in RAID5 mode, the first HDD has errors
- When using RAID6, the first two HDDs have errors.

- | | |
|------------|--|
| Blinks red | : Errors have occurred on the internal HDD
(Data cannot be recovered even if HDD is replaced) |
| | • When in RAID5 mode, the second HDD has errors |
| | • When in RAID6 mode, the third HDD has errors |

- | | |
|--|--|
| Lights orange and red
(Alternately) | : Recovering data from drive in RAID5/RAID6 mode.
(This indicator looks orange during high-speed processing.) |
|--|--|

The indicators display the status of the drives from HDD1 to HDD9, but if a system errors occur, each indicator has the same display.

Major Operating Controls and Their Functions

Important:

- When the HDD indicators light red in the RAID5/RAID6 mode, quickly replace the HDD where the errors occurred. Contact your dealer for information on replacing HDDs.

- RAID5 mode:
Data cannot be recovered when two or more HDD indicators are lighting or blinking red.

- RAID6 mode:
Data cannot be recovered when three or more HDD indicators are lighting or blinking red.

HDD status indicator (left side)

Shows the operating status of the HDDs.

Lights green	: HDD power [On] (HDD formatted)
Blinks green	: HDD for playback only (only for playback, recording not possible)
Blinks orange	: Formatting HDD
Lights red	: HDD format failed
Off	: HDD power [Off] HDD is not connected or not recognized

(7) Key hole

Use to open and close the front cover.
Keep the key in a safe place.

Lock	: Turn key to left
Open	: Turn key to right

(8) Maintenance port

Use for service when connected directly to a PC. Normally, it is not used.

Note:

- Use a straight cable to connect a PC directly to the maintenance port.

(9) Recording indicator [REC]

Lights	: Recording
Off	: Recording finished.

(10) Timer indicator [TIMER]

Lights	: When a schedule is set
Blinks	: Schedule recording in-progress

(11) Operate indicator [OPERATE]

Lights	: Power [On]
Off	: Power [Off]

(12) Arrow buttons (up, down, left, or right)

Use to move the cursor on the LCD and for direct input of values.

(13) Set button [SET]

Use to set items on the LCD.

(14) Escape button [ESC]

Use to return to the previous screen when doing operations on the LCD.

(15) Link indicators [LINK/ACT]

Camera Link indicator [LINK/ACT1]

Lights or blinks when linked with camera.

Lights green : When a camera port connection is established

Blinks green : Receiving data

PC Link indicator [LINK/ACT2]

Lights or blinks when connected to a PC (PC and camera when one port used).

Lights green : When a client PC port connection is established

Blinks green : Receiving data

Reserved Link indicator [LINK/ACT3]

This indicator is for future extension (off).

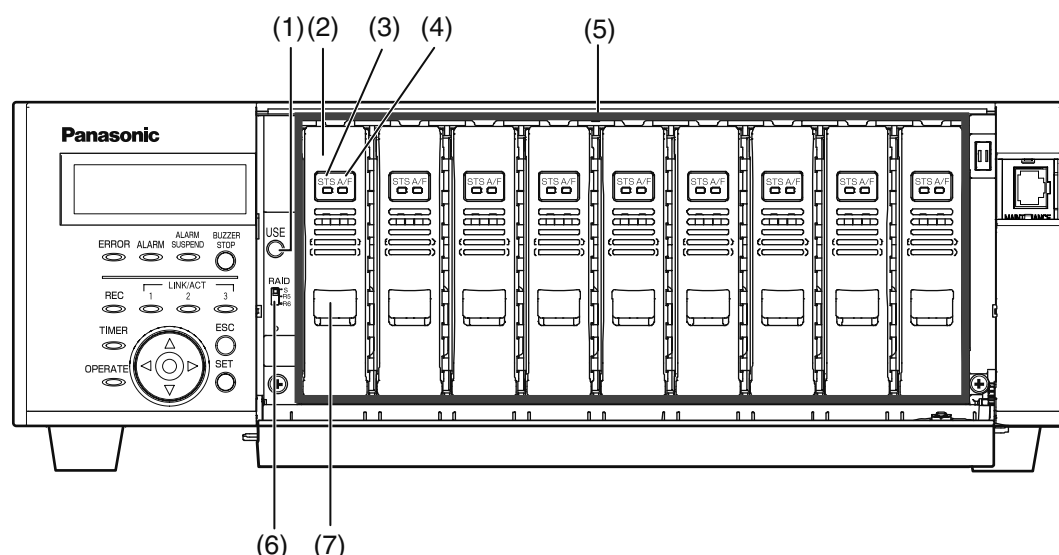
(16) Front cover

Open to add, or replace HDD units and to configure HDD operations (Single/RAID5/RAID6).

Keep it closed and locked during normal operations.

Major Operating Controls and Their Functions

Inside the Front Cover



(1) USE button [USE]

Used when adding or replacing an HDD or changing the operating mode of the HDD.

Installing or removing an HDD : You can install or remove the HDD by holding down the button for at least 2 seconds, waiting for the buzzer to sound, and using the front panel buttons and LCD operations.

HDD operation mode Change : The settings become effective after setting the [RAID] switch and turning on the Power switch while holding down the [USE] button to boot up. Remember to hold down the [USE] button until the buzzer sounds.

(2) HDD unit

HDD in special canister.
Add and replace HDDs by using the LCD on the front panel.
Refer to page 45 for details. Contact your dealer for information on purchasing and replacing HDDs.

(3) HDD status indicator [STS]

Shows the operating status of the HDDs.

Lights green : HDD power [On] (Formatted)
Blinks green : HDD for playback only (only for playback, recording not possible)
Blinks orange : Formatting HDD
Lights red : HDD format failed
Off : HDD power [Off]
HDD is not connected or not recognized.

(4) HDD access indicator [A/F]

Indicates the access status and problems with the HDD.

When errors occur on an HDD in RAID5/RAID6 mode, the indicator lights or blinks red.

Blinks green : Accessing HDD
Off : Not accessing HDD
Lights red : Errors have occurred on HDD (Data can be recovered by replacing HDD)
• When in RAID5 mode, the first HDD has errors
• When using RAID6, the first two HDDs have errors.
Blinks red : Errors have occurred on HDD (Data cannot be recovered even if HDD is replaced)
• When in RAID5 mode, the second HDD has errors
• When in RAID6 mode, the third HDD has errors
Alternating colors (Orange/red) : Recovering data from drive in RAID5/RAID6 mode. (This indicator looks orange during high-speed processing.)

Major Operating Controls and Their Functions

(5) HDD bay slots

Up to 9 HDD can be installed (one HDD unit is installed at the factory).

Note:

- Limiting factors for the RAID5/RAID6 mode.

RAID5 mode	: The RAID5 mode can be used when more than three HDDs are installed.
RAID6 mode	: The RAID6 mode can be used when more than four HDDs are installed.

(6) RAID mode switch [RAID]

Switches the HDD operational mode (Single, RAID5, or RAID6).

The settings become effective after setting the HDD operation mode with the [RAID] switch and turning on the power while holding down the [USE] button to boot up.

- | | |
|----|-------------------------|
| S | : SINGLE mode (default) |
| R5 | : RAID5 mode |
| R6 | : RAID6 mode |

Important:

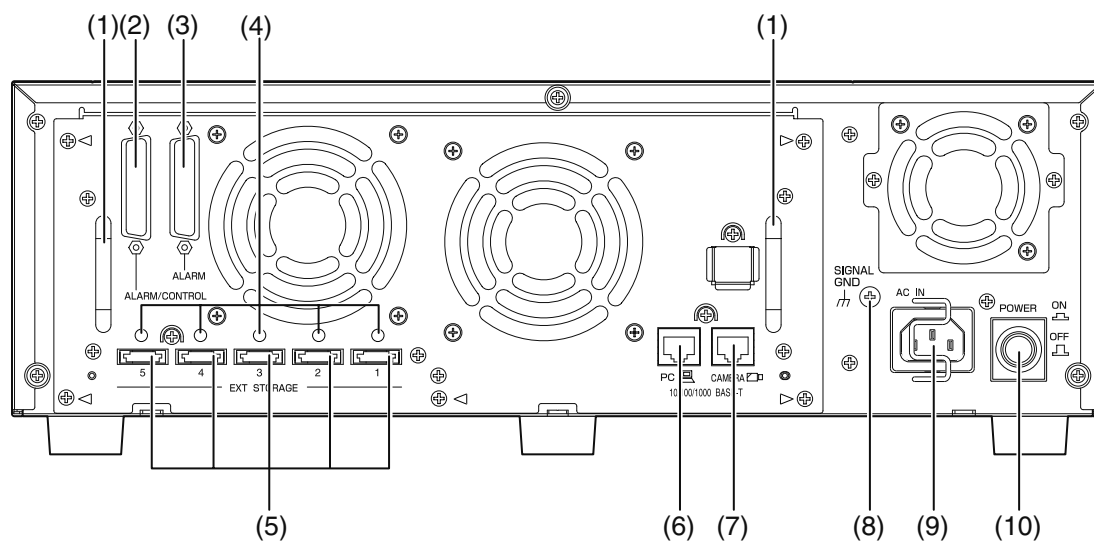
- The HDD operation mode cannot be changed once the system is operating. Recorded data may not be read correctly when the mode is changed after the system is operating.

(7) Removal knob

Used when replacing the HDD units.

Major Operating Controls and Their Functions

Rear View



(1) Handle for Maintenance

Loosen the 5 screws indicated by the triangles and grip these handles to pull off the panel when replacing the fan or doing other maintenance work.

(2) Alarm/Control connector [ALARM/CONTROL], D-Sub 25 pin

Use to connect alarm devices (buzzers or indicators), external devices, control switches controlled by the recorder.

(3) Alarm connector [ALARM], D-sub 25 pin

Use to connect alarm-related devices such as a sensor or a door switch.

(4) Cable clamp fixing holes

Install the cable clamp (provided with the extension unit) to secure the connection cables.

For details refer to the manual for the extension unit (WJ-HDE400).

(5) External storage connector [EXT STORAGE]

Use to connect the (WJ-HDE400) extension unit and the recorder with the connection cable (provided with the extension unit).

(6) Client PC port [PC]

Use to connect a PC, 10BASE-T, 100BASE-TX, or 1000BASE-T network.

(7) Camera port [CAMERA]

Use to connect a camera, 10BASE-T, 100BASE-TX, or 1000BASE-T network.

(8) Signal GND terminal [SIGNAL GND]

Use as a ground when the recorder's Signal GND terminal is connected to another device's Signal GND terminal. Static or other noise related problems may occur if a ground is not connected.

(9) Power cord Inlet [AC IN]

Connect the provided power cord here. The power plug is a two prong plug with a ground terminal.

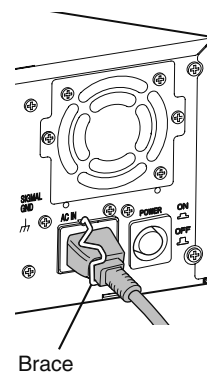
(10) Power switch [POWER]

Turns the power on. Press it again to turn the power off and end operations.

Using the Brace

Secure the power cord with the brace.

- 1 Lock the power cord in place by lifting and latching the brace.



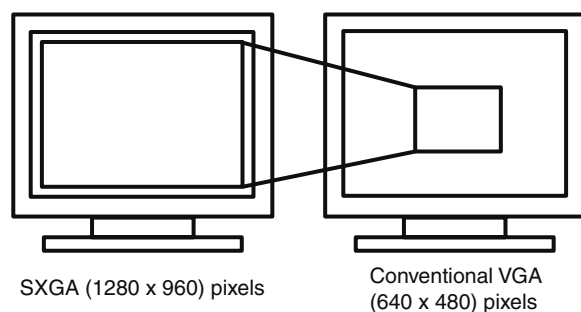
Outline of Functions

HDD

Mega Pixel Camera Compatibility and Capacity

The recorder can record high-definition images (mega pixel camera images) in SXGA (1280 x 960) JPEG four times that of the existing VGA (640 x 480). This makes it possible to record a wide angle of view and to zoom in without fuzziness to check things.

Display on 21 in PC monitor



You can install up to 9 HDDs to record high-quality images for long periods of time. Plus, you can add up to 5 extension units.

Replace HDDs

Replacement is Easy

You can install and remove HDDs by opening the front panel.

If more than two HDDs are installed, replacement can be done without stopping recording. Instructions are shown on the LCD to reduce misoperations, and make maintaining and replacing HDDs easy.

Use the special HDD canister provided to install the HDD.

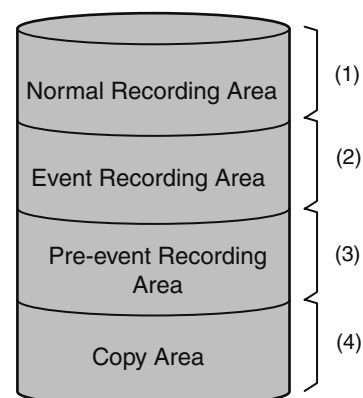
The HDD unit is an HDD that is in the special canister. The HDD units can be easily installed or removed from the HDD bay slots inside the front cover.

* Contact your dealer for information on purchasing and replacing HDDs.

HDD Space Management

The HDDs in the recorder are virtually divided in the 4 image areas shown below (refer to the Setup Instructions (PDF file)).

You can set only one area for each HDD.



You can check the remaining capacity for each area on the Setup menu.

(1) Normal Recording Area

Area for recording except events.

Manual recording/schedule recording/SD memory data

(2) Event Recording Area

Area for recording when events occur.

Post-event recording/emergency recording

(3) Pre-event Recording Area

Area for pre-event recording.

(4) Copy area

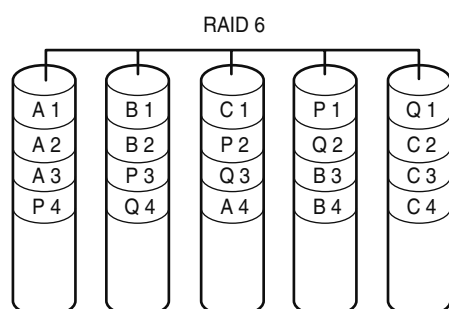
Area where copied data is saved.

Note:

- The HDD provided in the recorder at the factory is initialized as normal recording area. Unformatted HDDs inserted into the recorder are automatically initialized as normal recording area.
- Recording/playback is not possible if only the Pre-event Recording Area and the Copy Area are created. Create either one normal recording area or event recording area.
- If a normal recording area is not created, manual and schedule recordings are recorded to the event recording area. Also, if an event recording area is not created, event and emergency recordings are recorded to the normal recording area.

Outline of Functions

HDD Fault Tolerance System



The RAID function makes it possible to improve the HDD's tolerance to errors.

This product is equipped with the RAID6 mode that can recover image data when two HDDs fail, in addition to the RAID5 mode that can recover image data (RAID6 has two sets of error correcting code data). This prevents loss of recorded image data on large volume HDDs (refer to the Setup Instructions (PDF file)).

Note:

- To use the RAID5 mode you need to connect 3 or more HDDs, the RAID6 mode requires 4 or more HDDs.
- Theoretical volume when RAID5 mode enabled
Theoretical volume = HDD with smallest capacity in the unit x (number of HDDs in the unit -1)
- Theoretical volume when RAID6 mode enabled
Theoretical volume = HDD with smallest capacity in the unit x (number of HDDs in the unit -2)
- The capacity of the HDDs that are installed may be a few percents smaller.

Encrypting Data Recorded on the HDDs

The image and audio data recorded on the HDDs is encrypted. The image and audio data on the HDDs cannot be played except on the recorder.

The recorder uses RSA® BSAFE™ software from RSA Security Inc.



Outline of Functions

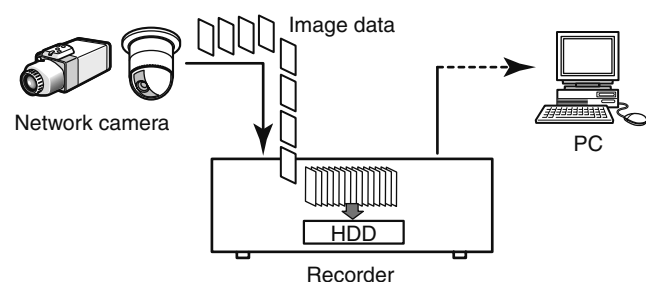
Recording and Playing Images

Stable recording and playback of images

High throughput is achieved by separating the camera port and the client PC port. In addition to acquiring extremely stable images, you can connect a maximum of 64 cameras and 16 client PCs, depending on your network.

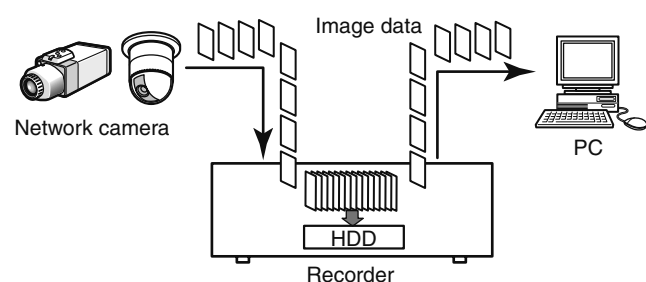
Recording

Camera images from network cameras are recorded on the recorder. One Network Disk Recorder can record images from a maximum of 64 cameras. JPEG, M-JPEG, and MPEG-4 images are supported.



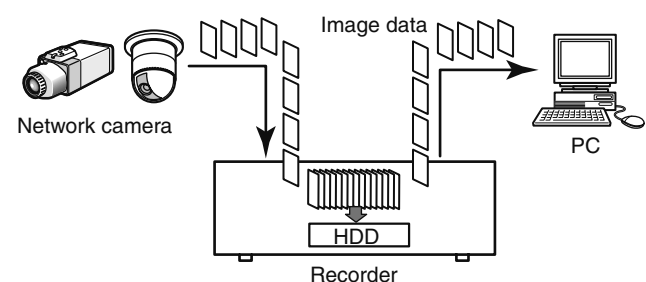
Playback

Images recorded on the HDD of the recorder are sent to and displayed on a PC. One Network Disk Recorder can send images to a maximum of 16 PCs.



Accessing Live Images

Images from network cameras can be sent live to PCs via the recorder. Images from a maximum of 64 network cameras can be sent simultaneously to a maximum of 16 PCs.



Setting Schedules

Schedules can be made so each day can be divided into six time zones, each of which can be programmed separately. Up to 8 different programs can be created. It is possible to set the recording rate, event recording time, and other items for each program.

Event Functions

About Events

Events are things that trigger special operations by the recorder.

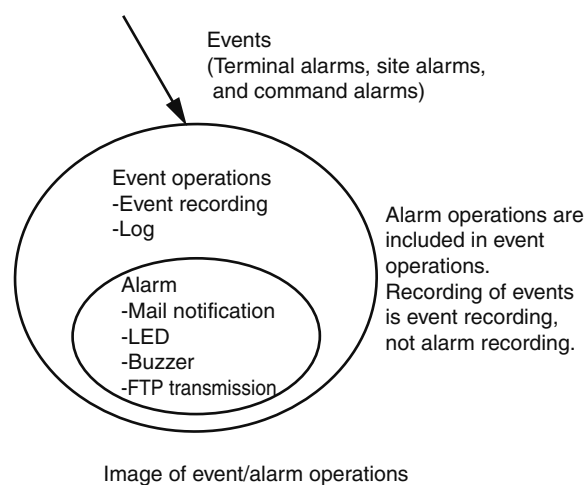
The event function includes terminal alarms, site alarms, and command alarms.

For example, if a camera sends a site alarm, the recorder receives the alarm and an event occurs.

About event operations

Event operations are the operations done when an event occurs.

Event operations include, depending on the settings, recording images, recording logs, sending external notification (mail notification, LED, buzzers, FTP transmission and others). Here, operations that send external notifications are called alarms.



The recorder starts an event according to the settings when the following events occur.

- Terminal Alarm : Signals from door sensors or other external devices are transmitted through the alarm input connector on the rear panel of the recorder.
- Command Alarm : Receives command alarms from PCs via a network.
- Site Alarm : Receives the Panasonic alarm protocol from network cameras.

Outline of Functions

Event operations include the following.

- Start recording images
Recording is done according to the recording duration and rate settings on the settings menu. The images from a camera before an event occurs can be recorded and linked to the event (pre-record event).
- Display alarm messages
A pop-up screen appears to indicate an event has occurred.
- Alarm indicator blinks
Alarm indicator on the front of the recorder blinks.
- Buzzer sounds
The buzzer sounds according to the settings on the settings menu.
- The camera goes to its preset position.
The camera moves to a pre-registered preset position.
- Notification email sent when event occurs
Alarm mail (notification of the time and date of an event) is sent to registered email addresses when an event occurs. An image can be attached to this email. Up to 4 addresses can be registered to receive the alarm mail.
- Alarm signal output from the Alarm/Control connector on the rear panel of the recorder (Alarm output)
When an event occurs, a signal is output from the Alarm connector on the rear panel of the recorder to sound an alarm etc.
- Event log is recorded.
When an event occurs, the type of event and the time it occurred are recorded in an event log.
- Images recorded during events are transmitted to an FTP server.
When an event occurs, images are recorded from when the event starts for a set period of time and are automatically transmitted to an FTP server.
- A PC is notified of an alarm according to Panasonic alarm protocol settings.
When an event or error occurs, a PC is automatically notified regarding event or error information according to the [Panasonic alarm protocol] settings. Install the software (option) on the PC designated to receive and display event or error notification.
Refer to the "readme.txt" file on the CD-ROM for details about the software.

List of Functions

Live Monitoring

Function	Description
1-screen	Live images from cameras (including audio) are displayed on one screen. The camera can be operated from the recorder when one screen is displayed (refer to the Operating Instructions (PDF file)).
4-screen	Live images from a camera are displayed on multi-screen.
Sequential display	Images from multiple cameras are shown in preset sequence on the screen.

Recording

Function	Order of priority*	Description
Emergency recording	1	Recording is done when an emergency occurs.
Event post recording	2	Recording is automatically done after various events occur.
Manual recording	3	Recording of images and audio can be started and stopped manually.
Schedule recording	4	Recording is done automatically during a set time period.
Pre-event recording	5	Recording is automatically done before various events occur.

* Order of priority: Images are recorded in the highest priority mode if more than one mode is enabled.

Setup Menu List

Refer to the Setup Instructions (PDF file) for information about the settings menu list.

Outline of Functions

Network

Remote Operation

The recorder and cameras connected to it can be operated from a PC on the network.

Enabled functions

When monitoring images from a camera with pan and tilt function.

Function	Description
Pan & tilt	Adjust the cameras horizontal and vertical position.
Zoom	Zoom in/out the image.
Focus	Adjust the focus point of the image.
Brightness	Adjust the lens iris. (brightness)
Preset operations	Registers the preset position of camera and moves the camera to the registered preset positions.
Auto	Select the camera's automatic mode function.

Network Security Function

The recorder has two network security functions.

Limit access with user authentication/host authentication

Turn on the user and host authentication to limit users that can access the recorder.

Limit access by changing HTTP ports

Illegal access from port scanning is prevented by changing the HTTP port number.

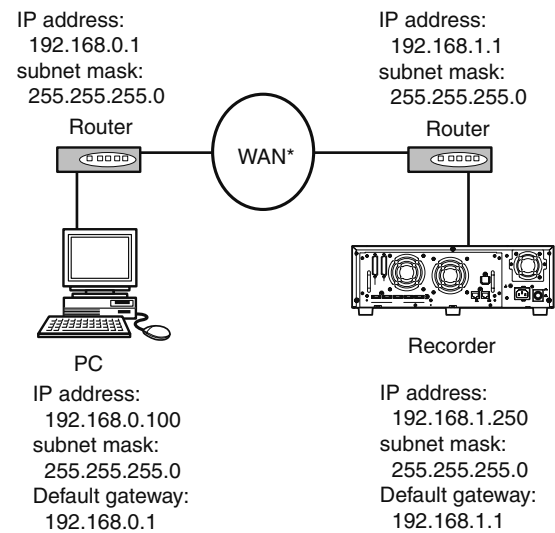
- To improve security even more

To improve network security, use a router to divide the subnet, make two layers of IP address authentication with the recorder and router. If the recorder is connected to a network that is not secure, you can improve security by inserting a VPN between the recorder and the host PC.

Important:

- Network security settings vary depending on the LAN the recorder is connected to and the service provider and other various settings. Contact the network administrator to discuss network security.

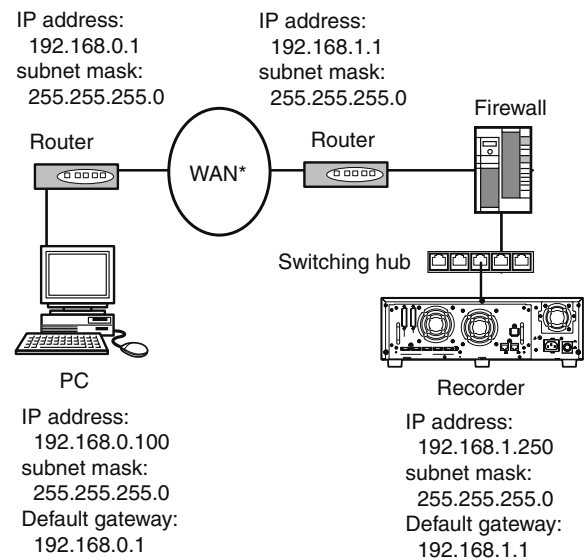
Connection Examples



*Wide Area Network

You can improve network security by using a firewall for packet and protocol filtering.

Connection Examples



*Wide Area Network

SD Memory Recording

If the connection with the camera is broken within the time set in the program in the recorder, images are recorded on the SD memory card in the camera.

Recording Rate Setting

SD memory recording can only be set when the camera supports it and the compression format is set to M-JPEG.

The recording rate for SD memory recording can be set for each camera channel. The time SD memory recording starts depends on the recording rate setting (refer to the Setup Instructions (PDF file)).

Acquiring images stored on the SD memory card

The images are acquired from the SD memory card and recorded on the HDD.

You can confirm if data is being acquired from the SD memory in the "Status display".

SD memory data acquisition is done once an hour at 15 minutes past the hour.

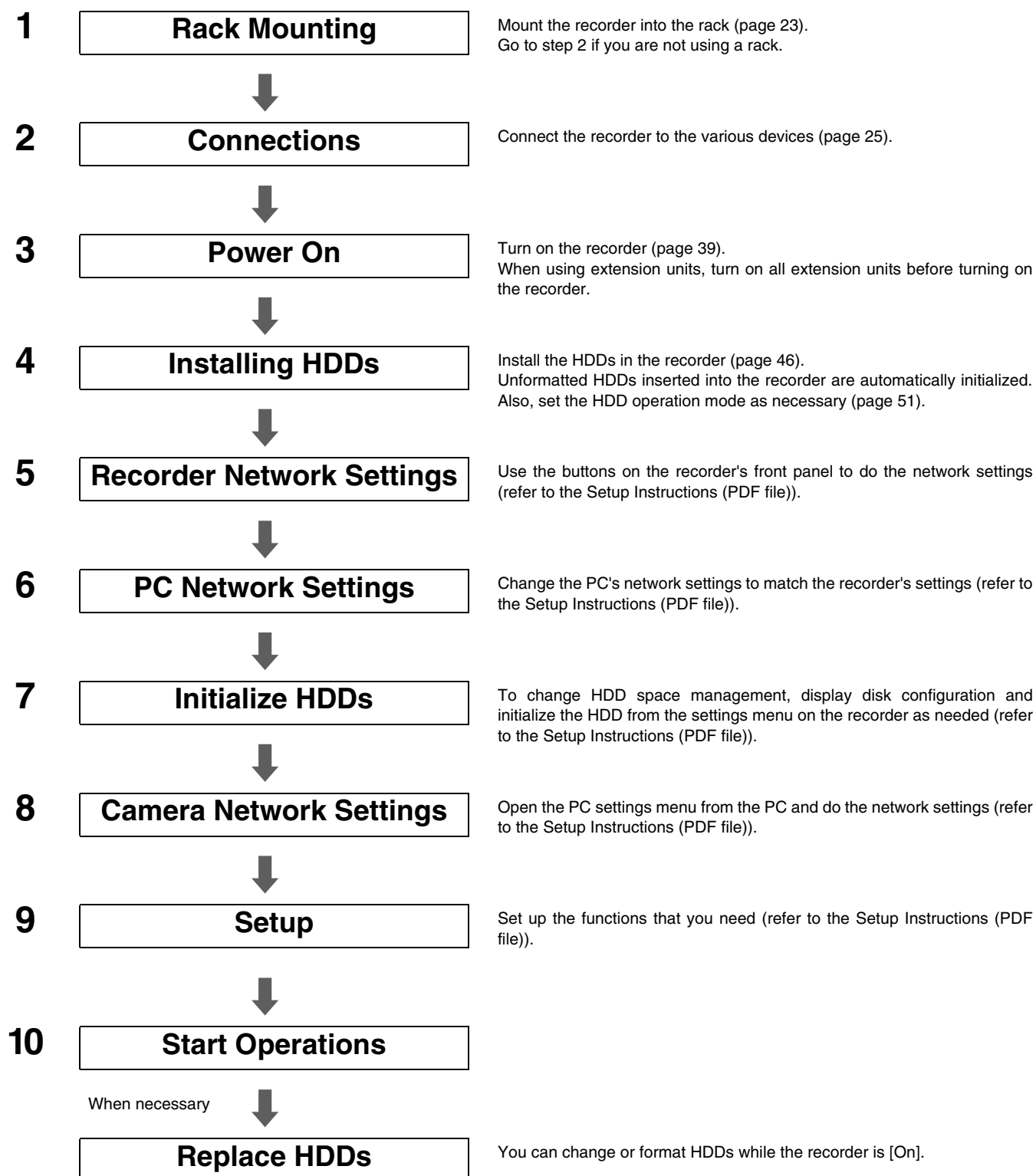
Maintenance (Version Upgrade)

You can upgrade the recorder's software with your browser.
Contact your dealer for information about upgrading the software.

Getting Started

Setup Procedure

The procedure to start operations is shown below.



Setting up the Rack

Rack Mounting

Install the recorder into an EIA standard compliant rack.

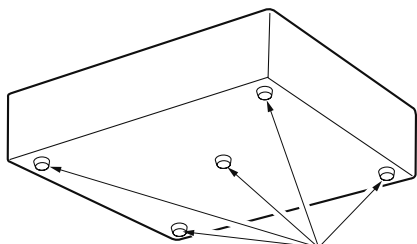
EIA standard compliant: an EIA-standard 19"rack, depth product 550 mm or more (locally procured)

Note:

- Installation in a rack requires four M5 x 12 screws.

1 Remove the 5 rubber feet from the underside of the recorder.

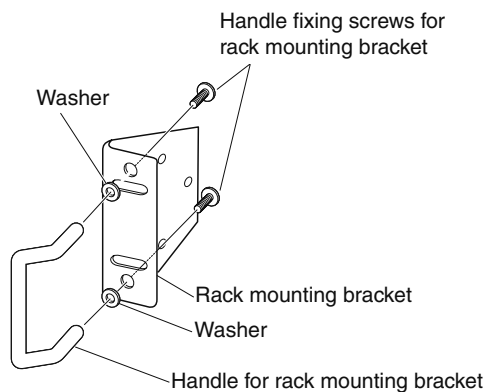
Use a screwdriver to remove the screws holding the rubber feet.



Remove rubber feet

2 Attach the handle for rack mounting bracket to the rack mounting brackets.

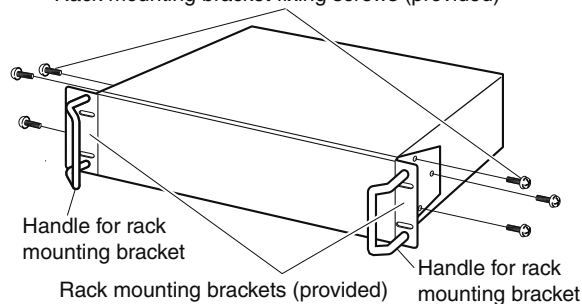
Use the four handle fixing screws for rack mounting bracket and washers to secure them.



3 Attach the rack mounting bracket to both sides of the recorder.

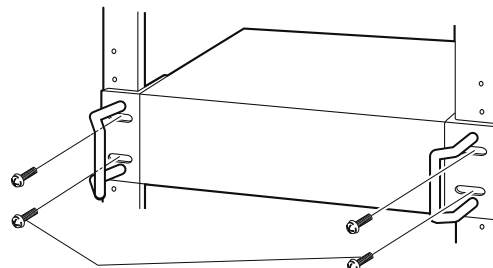
Secure them using the six rack mounting bracket fixing screws.

Rack mounting bracket fixing screws (provided)



4 Install the recorder in the rack.

Secure using the rack mounting screws.



Rack mounting screws (M5 x 12, locally procured)

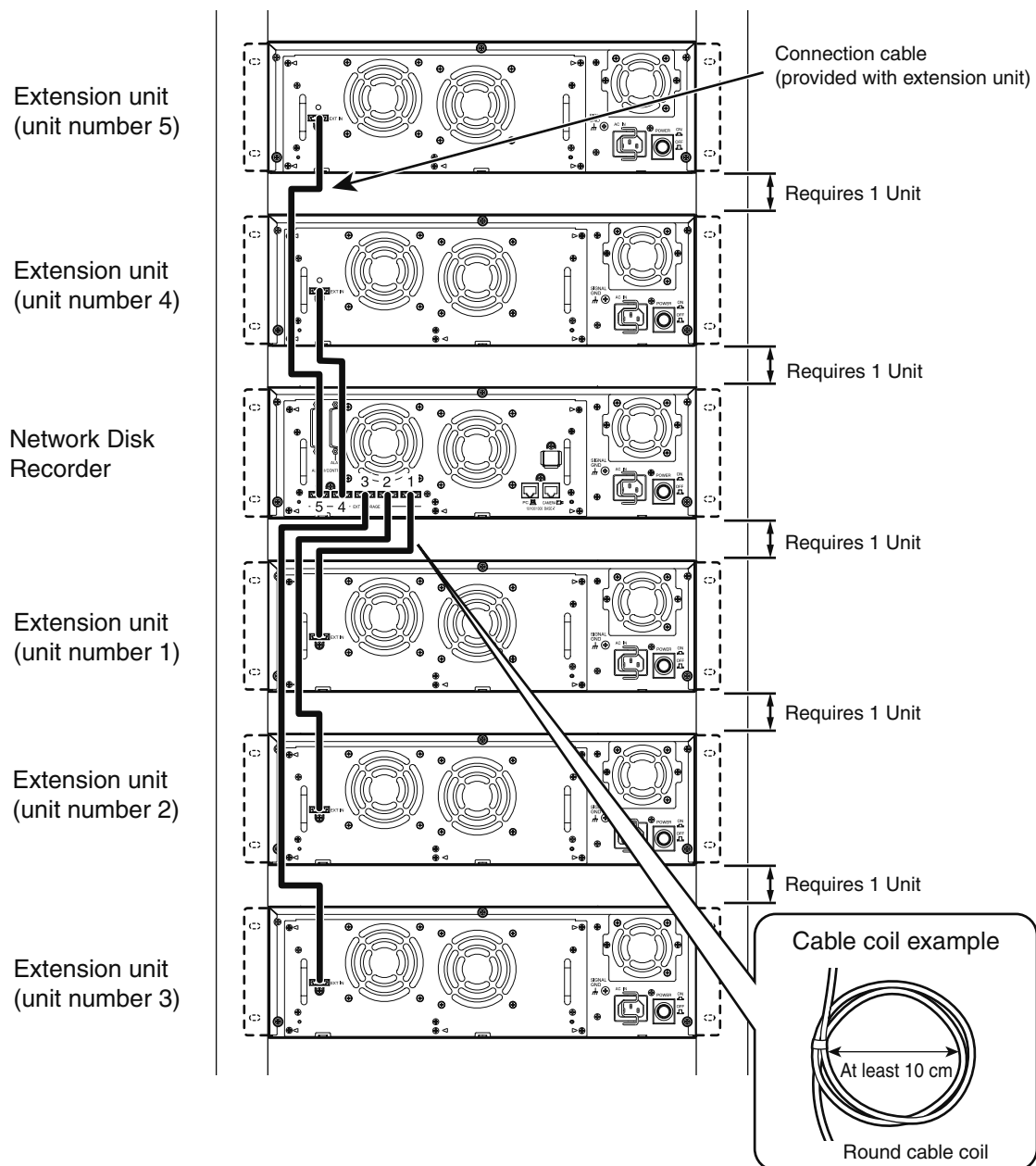
Important:

- Ensure that the temperature inside the rack does not exceed 45 °C {113 °F}.
- During installation, we recommend installing a fan to keep the temperature in the rack below 30 °C {86 °F}.
- When installing the recorder in the rack, leave a space of 1 unit (44 mm {1.73"}) above and below each unit.
- Leave space between racks and ensure proper ventilation around the racks.

Setting up the Rack

Rack mounting positions

When connecting multiple extension units (WJ-HDE400) to the recorder, place the recorder in the center of the rack. Connect the recorder and the extension unit with the connection cable (1 m {39.4 "}) included with the extension unit.



Note:

- Install the recorder in the center of the rack, if using a rack. If you install the recorder at the top or bottom of the rack, the cable may not be long enough.
- When installing the recorder in the rack, leave a space of 1 unit (44 mm {1.73 "}) above and below each unit.
- Secure the connection cables to the extension unit using the cable clamp provided.
If the connection is poor, the system may become unstable and unable to record images.
- Keep the cables as short as possible. Looped cables or large distances between pieces of equipment may cause malfunctions. Also, do not bend the cables more than 90°, wind the cables in a coil (10 cm {3.94 "}) in diameter).
- Refer to the Setup Instructions (PDF file) to check the unit numbers of connected extension units.

Connections

This sections explains how to connect the PC, cameras, and extension units. The types of cables and other hardware depend on how each setup is done. Before starting installation work, check to make sure you have everything you need.

Connecting the PC and the Camera

Connect the PC and the camera to the recorder using a HUB. The recorder is connected to the HUB via a LAN cable (straight). You can connect the PC and camera using either 1 port or 2 port operation.

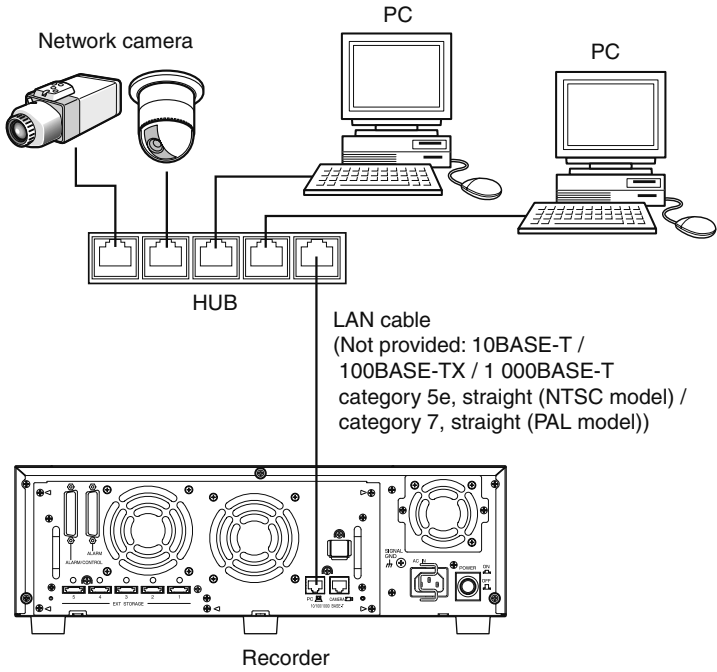
- Important:**
 - Use a LAN straight cable to connect the recorder and PCs via a hub.
 - Do not use a LAN cross cable to connect the recorder and PCs. Using a LAN cross cable for continuous operation may result in incorrect display and playback because depending on the type of PC transmission may not be steady.

Connectivity	Advantages	Ports Used
1-port Operation	Used when the PC and camera are on the same network and they directly access each other without passing through the recorder.	Client PC port
2-port Operation	Used when the PC and camera are on different networks and the PC cannot access the camera directly.	Camera port Client PC port

1 Port Operation

Using a HUB for Direct Connection

The PC connects to the camera using the Client PC port on the rear of the recorder.



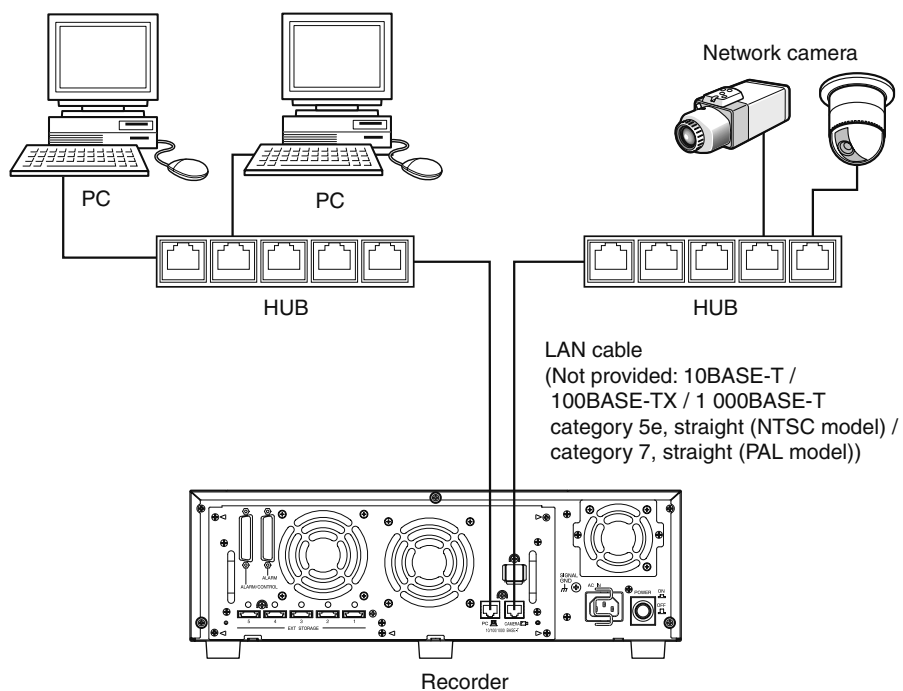
Camera images input through the client PC port are sent to the PC from the same client PC port.

Connections

2 Port Operation

Using a HUB for Direct Connection

The PC connects to the camera using the camera port and the client PC port on the rear of the recorder.



Camera images input through the camera port are sent to the PC from the client PC port.

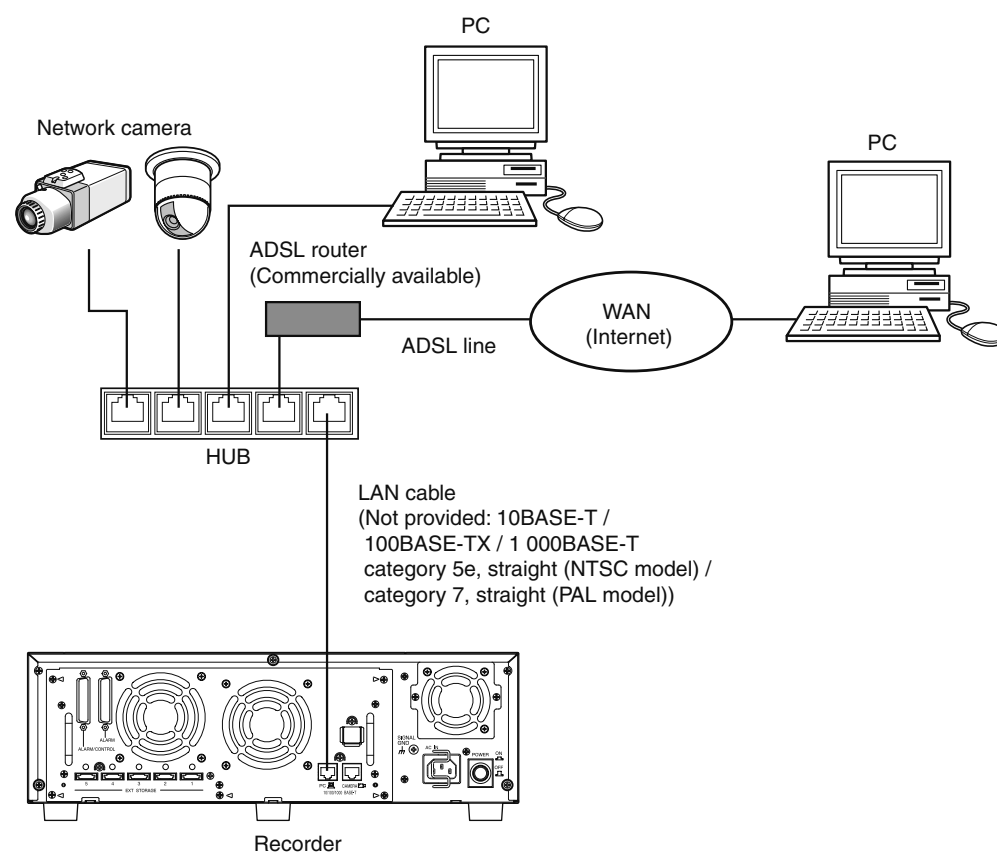
Important:

- Connect the camera to the camera port and the PC to the client PC port.
Connect the devices correctly. Otherwise, the transmission rate may be lowered.

Connections

Example of Connectivity with 1 Port Operation

Connecting to a PC over ADSL

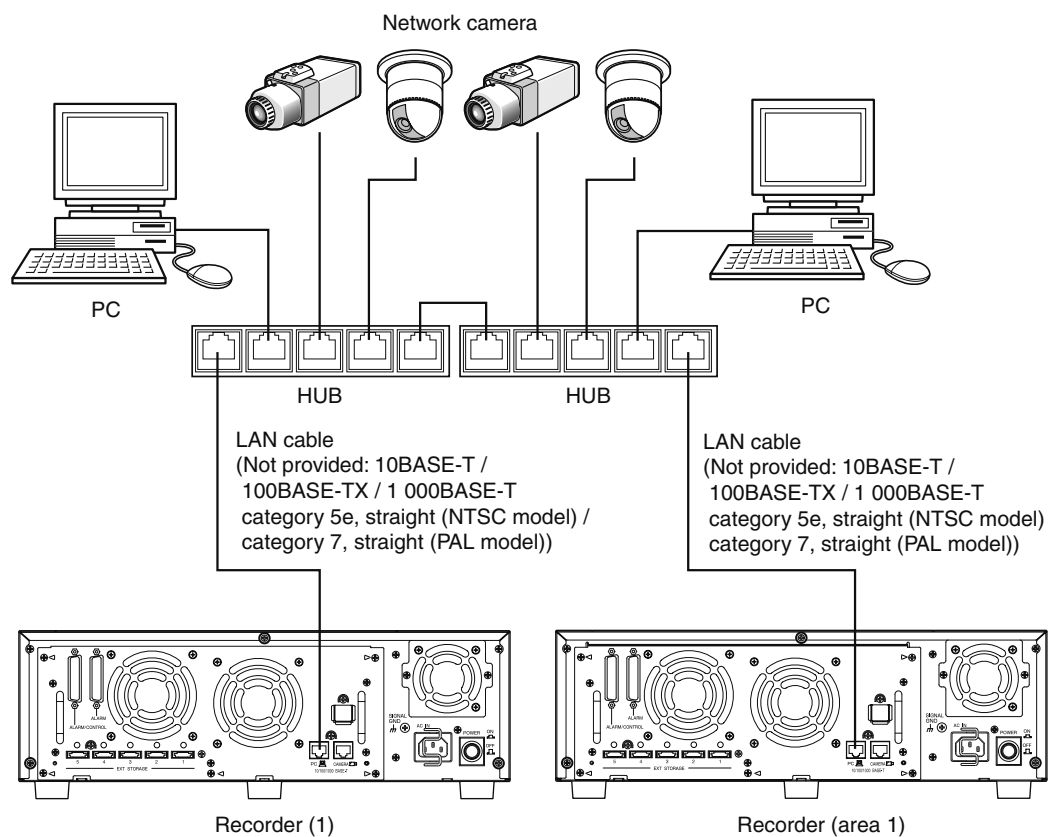


Note:

- MPEG-4 video may not be displayed when using a router. Consult your network administrator about router settings.

Connections

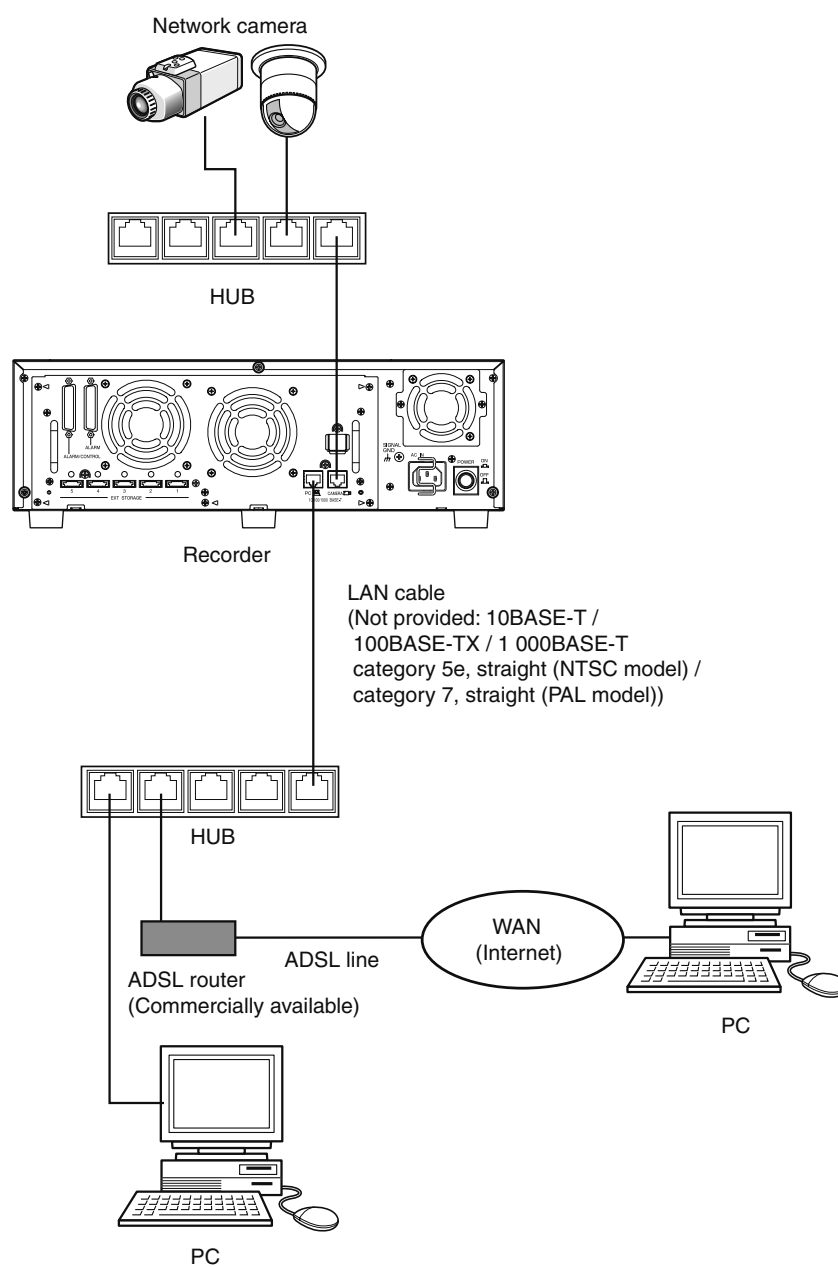
Connecting multiple units to the recorder



Connections

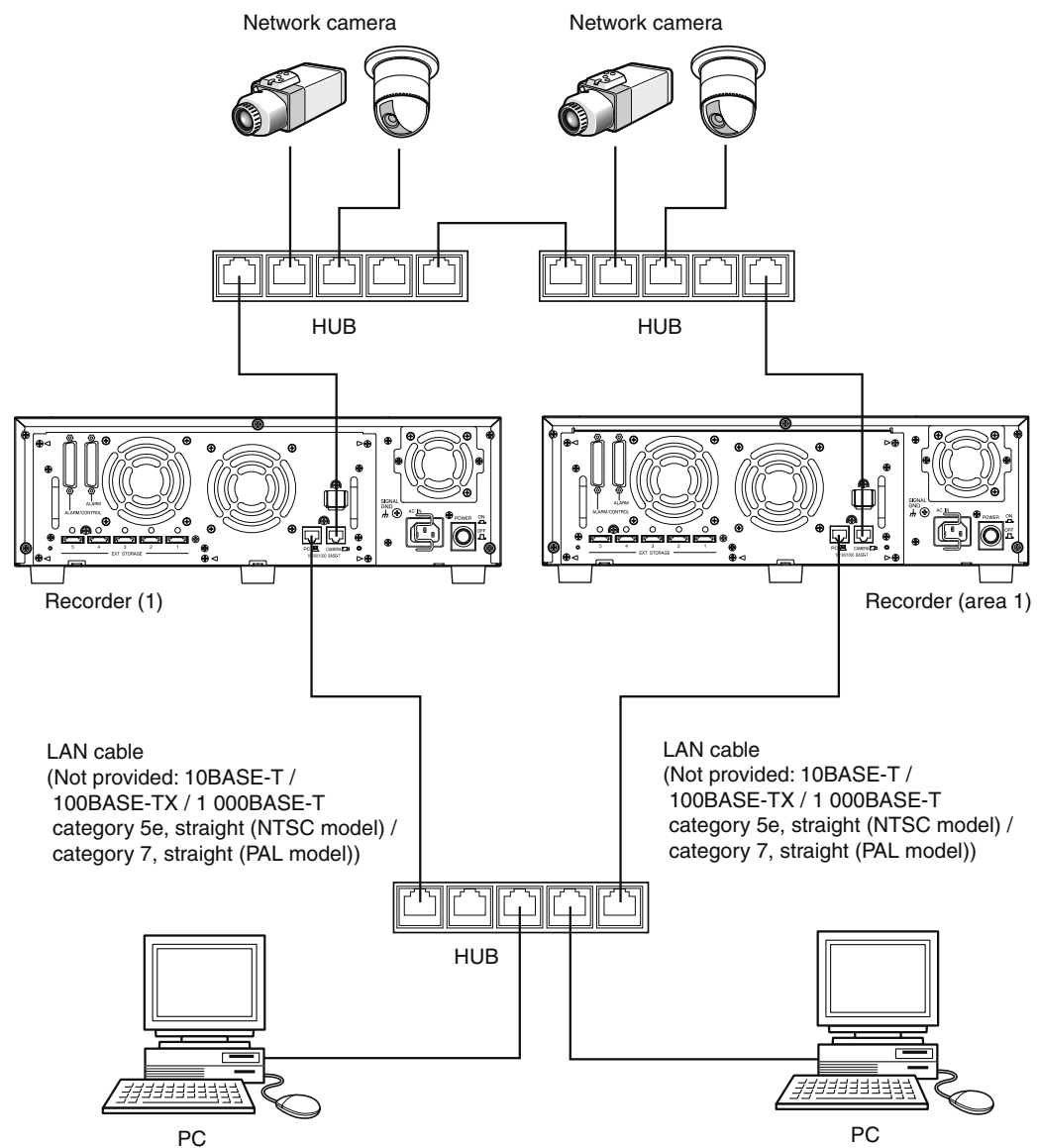
Example of Connectivity with 2 Port Operation

Connecting to a PC over ADSL



Connections

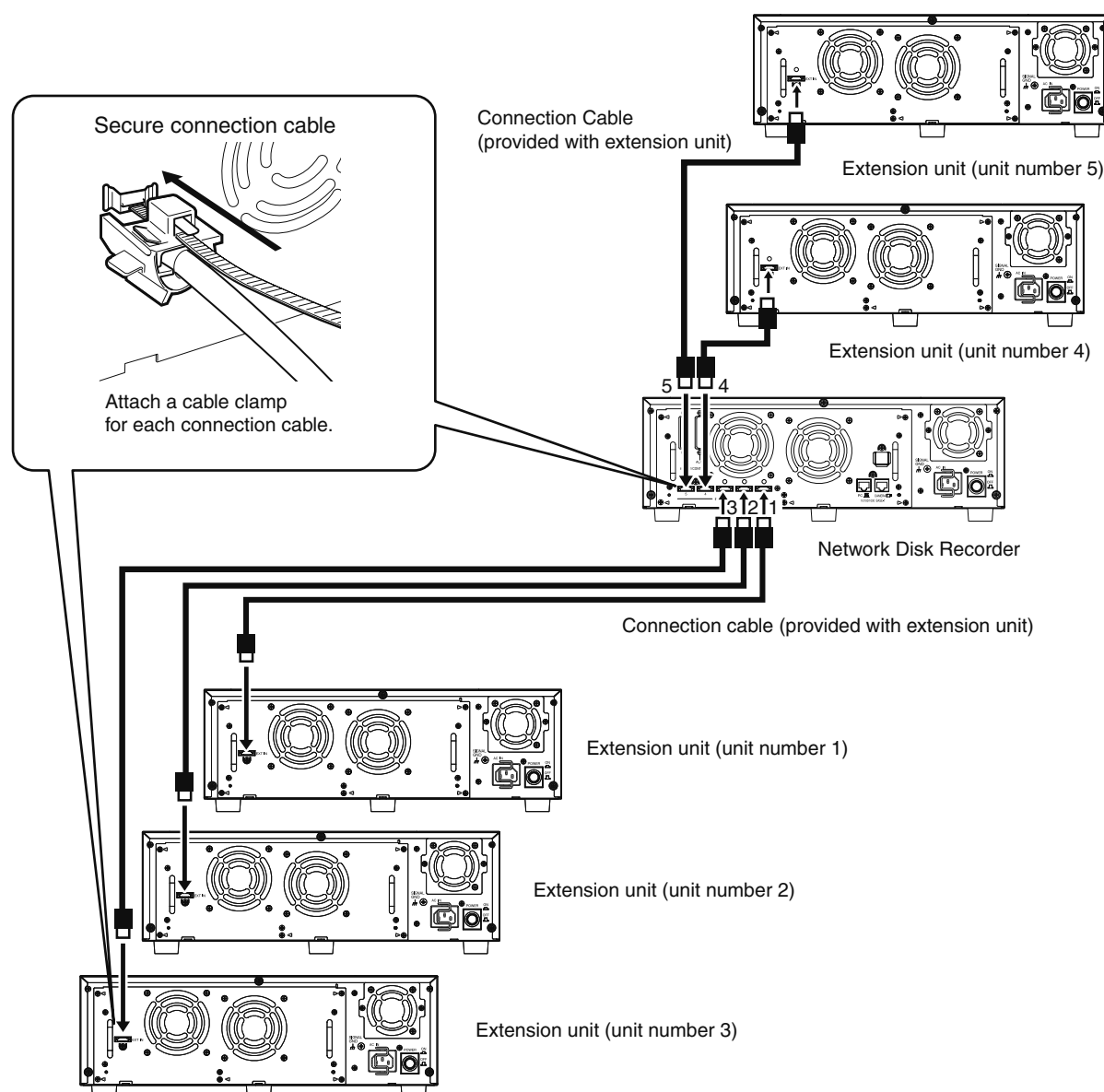
Connecting multiple units to the recorder



Connecting the Extension Unit

You can connect a maximum of 5 extension units to a single recorder. Connect the recorder and the extension unit with the connection cable included with the extension unit.

Connect as follows when connecting multiple extension units (WJ-HDE400) or adding a new connection. Also, be sure to read the user manual for the extension unit.



Important:

- Connecting extension units requires the included connection cable.
- Secure the connection cables to the extension unit using the cable clamp provided. If the connection is poor or the connector is not secure, the system may become unstable and unable to record images.

About Connectors

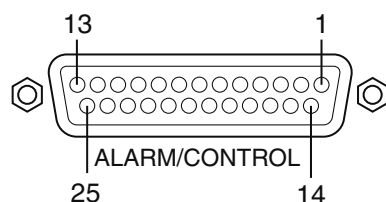
Using the Alarm/Control connector

You can use emergency recording and auto adjustment time functions when alarm equipment like a buzzer or indicator which is mounted externally.

Create the connector by referring to the pin assignments.

Pin Assignments

The pin assignments are different for other Network Disk Recorders. Connect using the following chart.



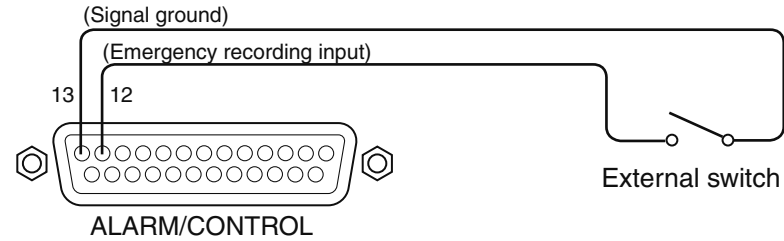
Pin Number	Name	Description of Operation	Remarks
1	Alarm input 8	Event action will be performed according to the settings.	Non-voltage make contact input 5V pull-up 150 kΩ
2	Alarm input 9		
3	Alarm input 10		
4	Alarm input 11		
5	Alarm input 12		
6	Alarm input 13		
7	Alarm input 14		
8	Alarm input 15		
9	Alarm input 16		
10	Network error output	Signal output upon detection of a broken Ethernet link. Signal output upon DHCP IP address expiration.	Open collector output 24 V DC max., 100 mA
11	Alarm reset input	Canceling the alarm display	Non-voltage make contact input 5V pull-up 150 kΩ
12	Emergency recording input	Starting emergency recording signal input	
13	Signal ground		
14	Signal ground		
15	Available disk space warning output	Signal output for available disk space warning of the recording/copy area	Open collector output 24 V DC max., 100 mA
16	HDD error output	Signal output upon detection of a HDD error	
17	Camera error output	Signal output upon detection of a camera error	
18	Error output	Signal output upon detection of a unit error	
19	Power outage recovery completion output	Signal output upon completion of outage processing	High (+5 V - +12 V, 6.3 mA max.)
20	Time adjustment input/output	The time of this unit is adjusted to the preset time according to the signal input. This signal output is then generated for the setting time of this unit. Time of all other units is adjusted to the setting time of this unit.	52 kΩ 5 V pull-up, Output current –100 mA/Non-voltage make contact input
21	Alarm output	Alarm signal output at an event occurrence	Open collector output 24 V DC max., 100 mA

About Connectors

Pin Number	Name	Description of Operation	Remarks
22	Alarm suspension input	The state of alarm suspension is assumed according to the signal input.	Non-voltage make contact input 5V pull-up 150 kΩ
23	Outage detection input	Start of outage processing according to the signal input.	
24	External recording mode switching input	Changeover to the external recording mode	
25	+5 V output	+5 V output	200 mA max.

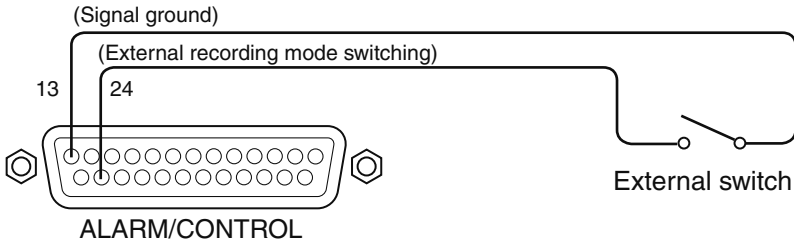
Connectivity for Emergency Recording

Turning [On] the external switch starts emergency recording.
Emergency recording operations differ depending on the [Emergency rec.] settings accessed through the Setup menu (refer to Setup Instructions (PDF file)).



Connectivity for Switching to External Recording

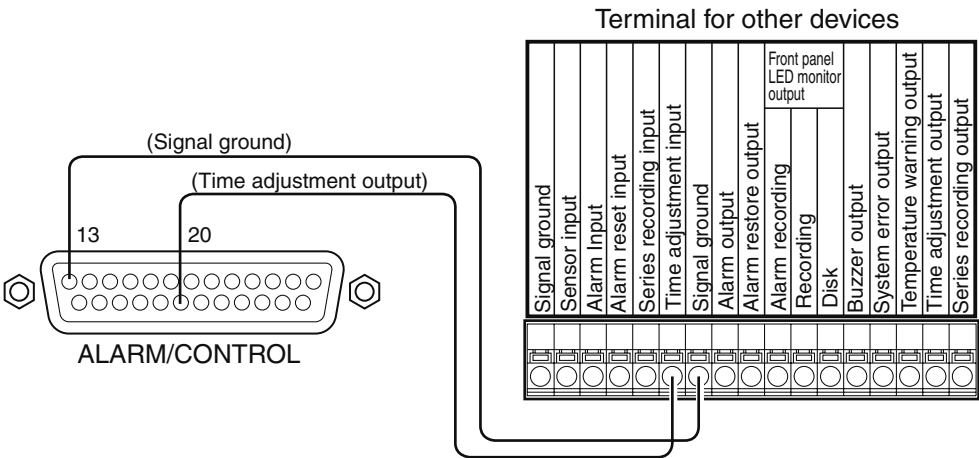
Turning [On] the external switch, records by switching the program.
Set the recording program in [Time table setup (Ext.)] under [Time table] on the settings menu (refer to Setup Instructions (PDF file)).



Auto Adjustment Time Function Connection 1

When settings menu - [Basic] - [Time & date] - [Auto adjustment time] is set to [Master]

[Time Adjust Output] is available and the time on other devices is synchronized with the recorder.
When the time set under [Activation time] is reached, a signal is output from the Time adjustment input/output (pin no. 20).



About Connectors

Auto Adjustment Time Function Connection 2

When settings menu - [Basic] - [Time & date] - [Auto adjustment time] is set to [Slave]

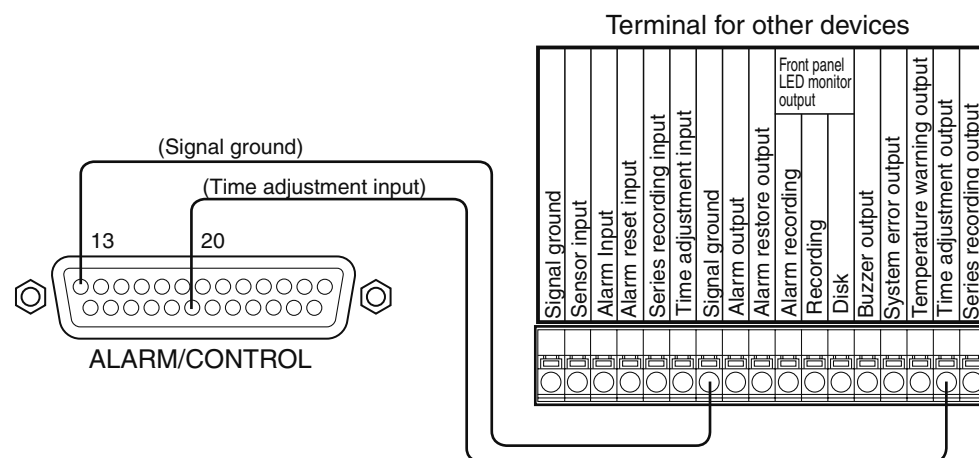
[Time Adjust Input] is available and the time on the recorder is synchronized with the other devices.

15 minutes before or after the set [Activation time] if a signal output from another device is input to the Adjustment Time I/O, the time on the recorder is set to the [Activation time].

Example:

When the [Activation time] is set to 15:00

- A signal is received at 2:50:00 pm → Set to 3:00:00 pm
- A signal is received at 3:14:45 pm → Set to 3:00:00 pm
- A signal is received at 3:20:00 pm → Time is not adjusted.



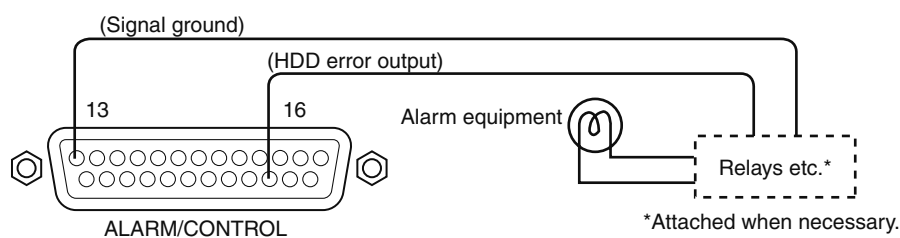
Important:

- When [Auto adjustment time] is set to [Slave], time adjustment is not performed during emergency recording and event recording.

Connectivity for Control Output

Connecting alarm equipment like the buzzer and indicator to pins 15 to 18 sounds the buzzer, lights the indicator and indicates operating status when a signal is output.

An example of HDD error output (pin 16) is shown below.



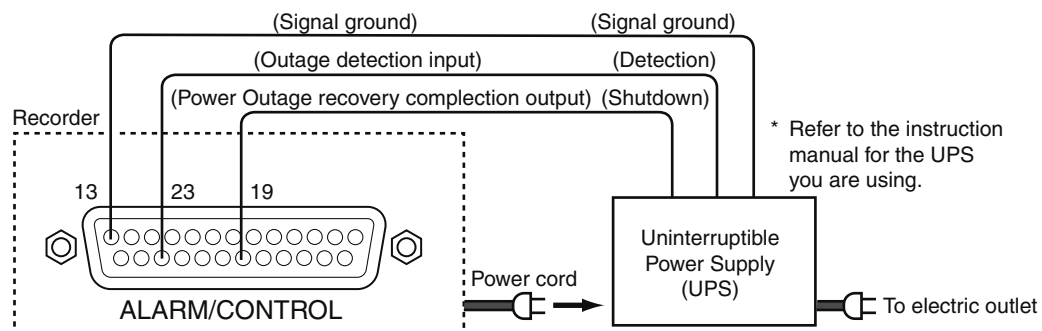
About Connectors

Uninterruptible Power Supply (UPS) Connectivity

This section explains how to connect an Uninterruptible Power Supply (hereafter UPS) as part of your power outage countermeasures.

When the recorder receives a power outage detection signal from the UPS, it begins its internal power off sequence (process to stop recording to protect the recorder).

After the internal power off sequence is complete, a signal is output from the Power outage recovery completion output to the UPS and the recorder is then ready to turn off power.



Important:

- Be sure to use a UPS that provides a sine-wave output. Do not use a UPS that provides a square wave. Doing so may damage the recorder.

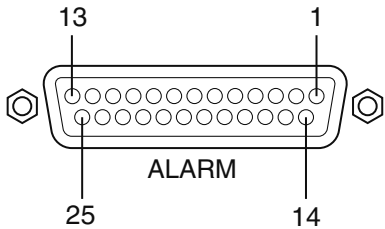
About Connectors

Using the Alarm Connector

Used to connect alarm-related devices such as a sensor or a door switch.
Create the connector by referring to the pin assignments.

Pin Assignments

The pin assignments are different for other Network Disk Recorders. Connect using the following chart.



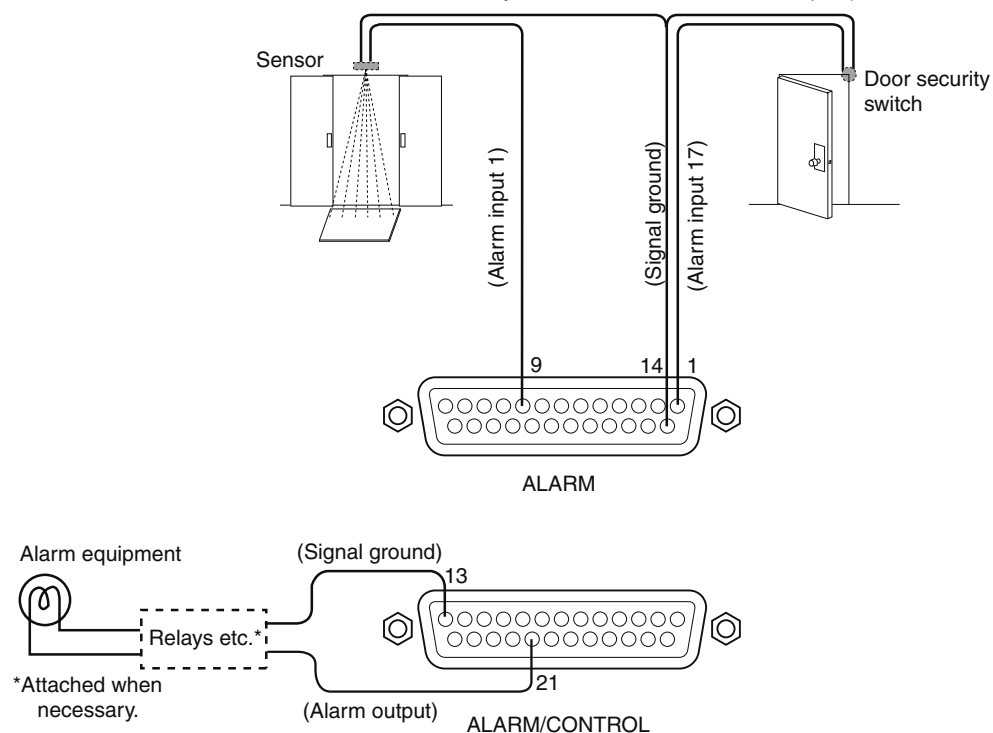
Pin Number	Name	Description of Operation	Remarks
1	Alarm input 17	Event action will be performed according to the settings.	Non-voltage make contact input 5 V pull-up 150 kΩ
2	Alarm input 18		
3	Alarm input 19		
4	Alarm input 20		
5	Alarm input 20		
6	Alarm input 22		
7	Alarm input 23		
8	Alarm input 24		
9	Alarm input 1		
10	Alarm input 2		
11	Alarm input 3		
12	Alarm input 4		
13	Signal ground		
14	Signal ground		
15	Alarm input 25	Event action will be performed according to the settings.	Non-voltage make contact input 5 V pull-up 150 kΩ
16	Alarm input 26		
17	Alarm input 27		
18	Alarm input 28		
19	Alarm input 29		
20	Alarm input 30		
21	Alarm input 31		
22	Alarm input 32		
23	Alarm input 5		
24	Alarm input 6		
25	Alarm input 7		

About Connectors

Alarm Connectivity

When a signal is input to Alarm Inputs 1 through 32 (Alarm connector pins 1 through 12 and 15 through 25, Alarm/Control connector pins 1 through 9), recording and camera images are shown according to the settings.

When alarm devices such as a buzzer or indicator are installed externally, connect them to the Alarm output (Alarm/Control connector pin 21).



About Connectors

Alarm/Control connector and Alarm Connector Timing and Polarity

Connectors	Active Time	Remarks
Alarm input	100 ms or more	L active
Alarm output	The time set on the setup menu	L active
Network error output	Until the network error is cleared, or until the [ERR] button on the operation window (browser) is clicked.	L active
Alarm reset input	100 ms or more	L active
Emergency recording input	100 ms or more	L active
Available disk space warning output	From the time of the error occurrence until the time of the error output duration*	L active
HDD error output	From the time of the error occurrence until the time of the error output duration*	L active
Camera error output	From the time of the error occurrence until the time of the error output duration or the camera is reset*	L active
Error output	From the time of the error occurrence until the time of the error output duration*	L active
Time adjustment input/output	Input: 100 ms or more Output: 1 s	Input/Output: L active
Alarm suspension input	100 ms or more	L active, judged level
External recording mode switching	100 ms or more	L active
Outage detection input	5 s or more	L active
Power outage recovery completion output	10 s or more	H active

*The error output timing is set under [Basic] on the settings menu (refer to the Setup Instructions (PDF file)).

Note:

- During L active (Low active), the logic is enabled when the signal's voltage level is Low.
- During H active (High active), the logic is enabled when the signal's voltage level is High.

Power Supply

Turning On the Power

Turn on the recorder.

- 1 Insert the power plug to an outlet.**
120 V AC, 60 Hz for NTSC model
220 V - 240 V AC, 50 Hz for PAL model
 - Make sure the power source matches the power requirement of the model in use.
- 2 Turn on the [POWER] switch on the rear of the recorder.**
 - The operate indicator lights and recorder/HDD check (system check) begins.
 - During system check, [WJ-ND400] appears on the LCD. Also, [Don't turn off] is displayed, followed by [System Checking].
 - The Time display format screen appears when the system check is complete (page 40).

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Important:

- When using extension units (WJ-HDE400), turn on all extension units before turning on the recorder.

Turning Off the Power

Turn off the recorder.

Important:

- When the recorder is not in use for an extended period of time, unplug the power plug.
- Be sure to turn the power on and operate once a week to check recording and playback functionality.

During Recording

- 1 Set [Basic] - [Basic] - [Recording] on the settings menu to [Off] and stop all recording (refer to the Setup Instructions (PDF file)).**
- 2 Turn off the [POWER] switch on the rear of the recorder after checking that the HDD indicators are off.**
The operate indicator goes off.

Note:

- Do not forget to start recording when you turn on the power.

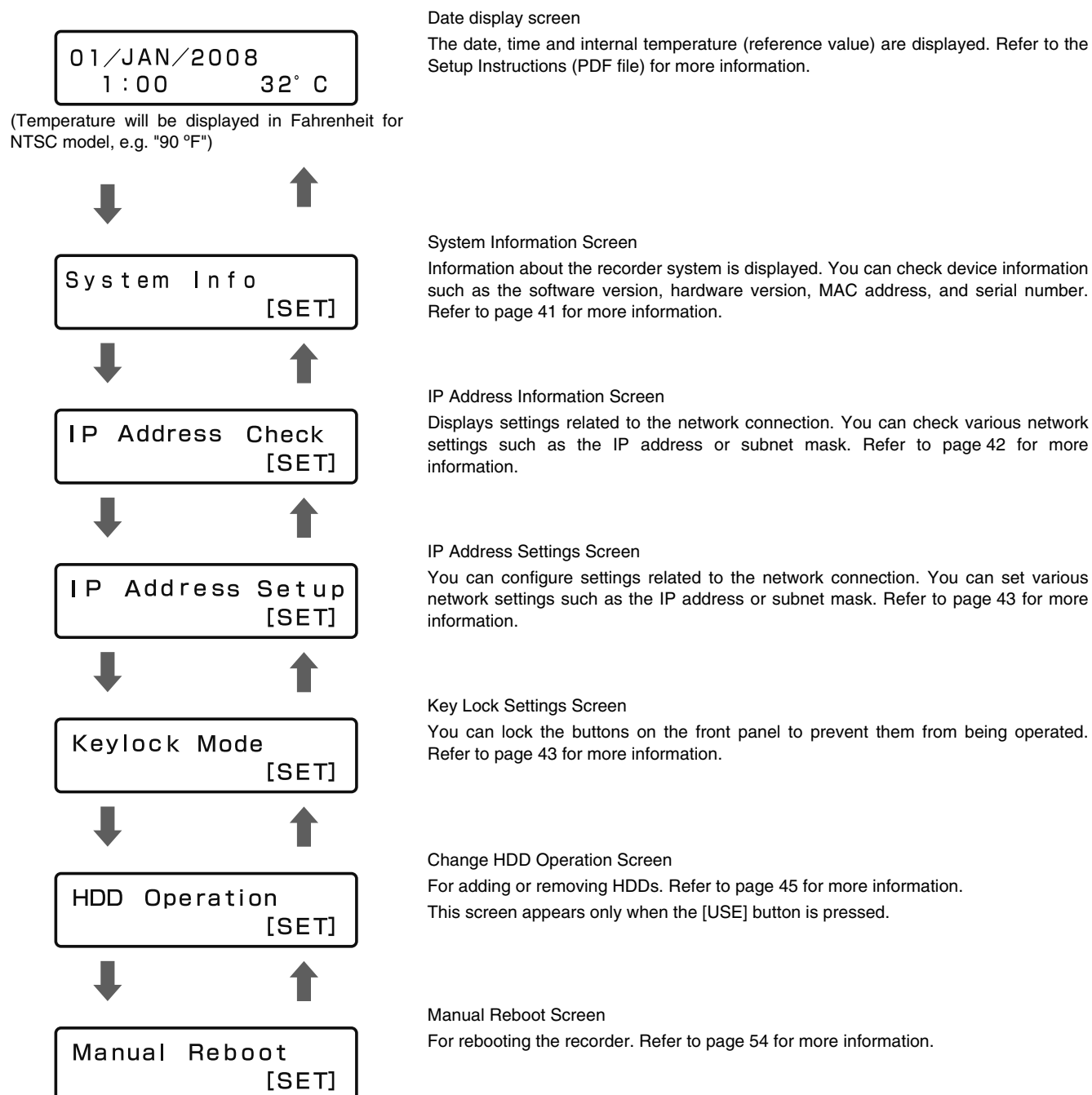
During Playback

- 1 Click the [STOP] button on the [HDD] tab to stop playback (refer to the Operating Instructions (PDF file)).**
- 2 Turn off the [POWER] switch on the rear of the recorder after checking that the HDD indicators are off.**
The operate indicator goes off.

Using the Front Panel for Operations

Basic Operations

Operate the recorder using the LCD and the buttons on the front panel. The LCD changes as follows when you press the arrow buttons (up or down).

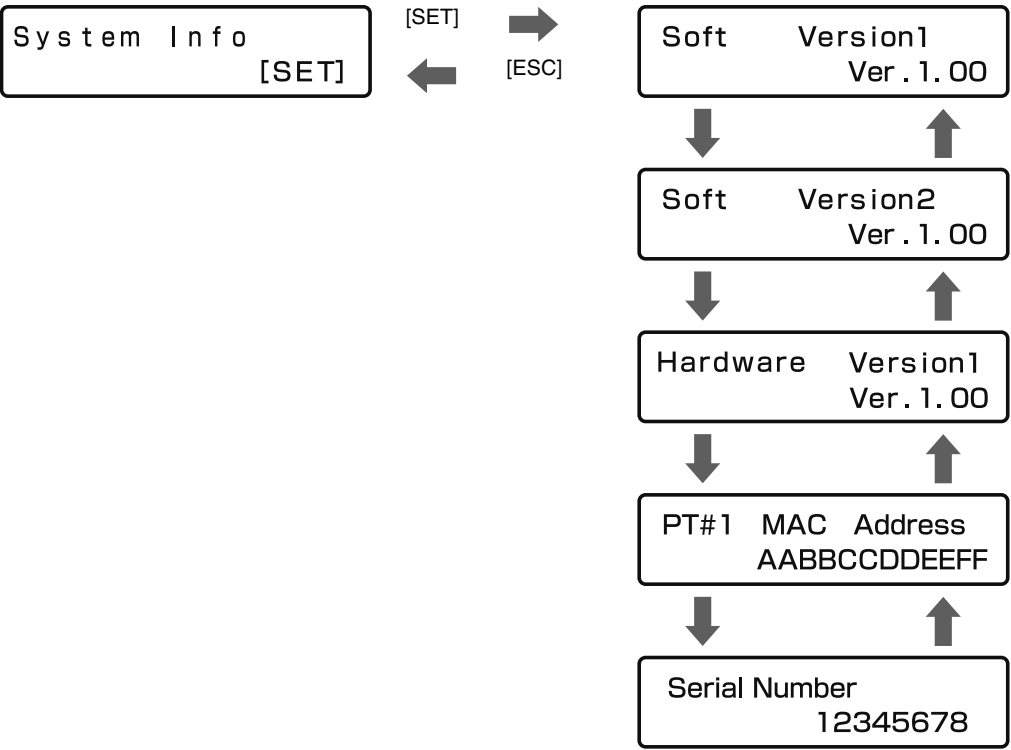


Using the Front Panel for Operations

Checking System Information

For checking information (software version, hardware version, MAC address, or serial number) about the recording system. Check the settings by switching between screens using the following operations.

The LCD changes as follows when using the arrow buttons (up or down). Also, pressing the arrow buttons (left or right) from [PT#1 MAC address] switches between the PT#2 and PT#3 screens.



Using the Front Panel for Operations

Checking the IP Address

You can check the DHCP, IP address, subnet mask, gateway, and HTTP port for each port. The following ports are displayed: Camera port: PT #1, Client PC port (PC port): PT #2, and the Maintenance port: PT#3.

Use the arrow buttons (left or right) to switch between ports.

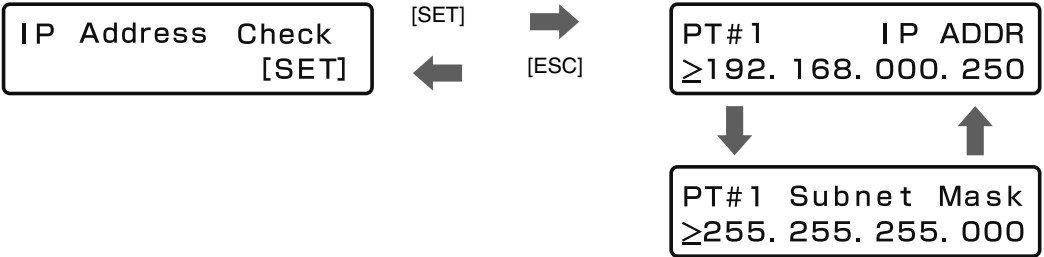
* Gateway and HTTP port settings are checked under the client PC port (PT #2).

The following shows the initial default values for the recorder network settings.

Item	Camera port	Client PC port	Maintenance port
DHCP	–	OFF	–
IP address	192.168.0.250	192.168.1.250	192.168.2.250
Subnet mask	255.255.255.0	255.255.255.0	255.255.255.0
Gateway	–	192.168.1.1	–
HTTP port	–	80	–

Check the settings by switching between screens using the following operations.

The LCD changes as follows when using the arrow buttons (up or down).



Using the Front Panel for Operations

Setting the IP Address

Settable items are the same as those in "Checking the IP Address (page 42)".

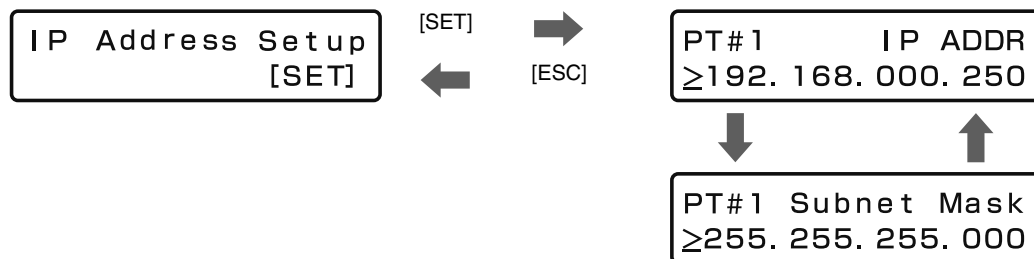
Configure the settings for each item by switching between screens using the following operations. When the cursor is ">", use the arrow buttons (up or down) to switch between screens. The cursor is shown with an under bar (_).

The ports are displayed as follows: Camera port: PT #1, Client PC port: PT #2, and Maintenance port: PT #3.

Use the arrow buttons (left or right) to switch between ports.

Gateway and HTTP port settings are configured under the client PC port (PT #2).

The LCD changes as follows when using the arrow buttons (up or down).



Important:

- Always configure the network settings for the ports using different subnet masks. Using the same subnet mask may result in improper network communication.

Configuring the Settings for Each Item

- 1 Click the [SET] button when the cursor is [>].**
The cursor moves to the number area.
 - When the cursor is ">" and you press the arrow buttons (left or right), the PT #2 and PT #3 screens are displayed and you can select other ports.
- 2 Move the cursor using the arrow buttons (up or down) and enter values using (up or down).**
- 3 Press the [ESC] button to move the cursor to ">" and check the settings.**

Setting and Canceling Key Lock

You can lock the buttons on the front panel to prevent them from being operated. Press the [SET] button on the Key Lock Setting screen to lock the keys. [Keylock Enabled] is displayed. Then, it returns to the display format screen.



To cancel the key lock, enter the password (default: 12345) on the Password Entry screen. You can change the password on the settings menu. Refer to the Setup Instructions (PDF file) for more information.

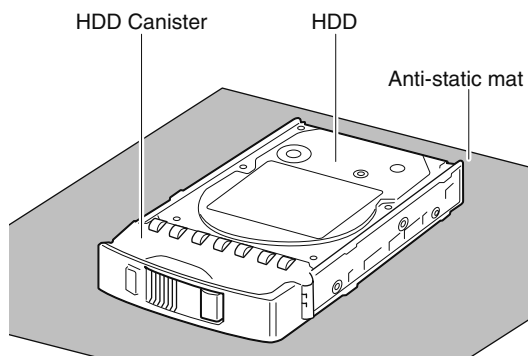
Using the Front Panel for Operations

HDD Unit

Use the HDD canister provided to install the HDD.

The HDDs can be easily installed or removed from the HDD slots inside the front cover.

Contact your dealer for information on purchasing, installing, and replacing HDDs.



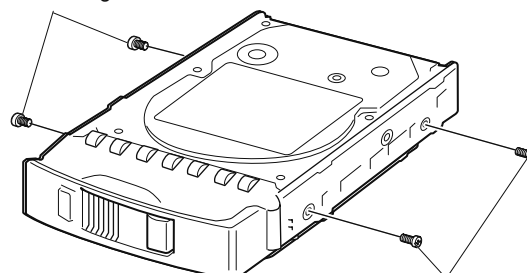
Important:

- HDDs are precise devices. Before starting work, refer to "Hard disk drives (page 9)" for information on how to handle HDDs. Also, note the following precautions.
 - Do not subject them to vibration or impact.
 - To install HDDs, use a torque driver and tighten the screws to the specified torque.
 - Before touching an HDD, ground yourself against a metal object to eliminate any static electricity. Always hold the HDDs by the sides when carrying them.
 - Use an anti-static mat and wristband when installing or replacing HDDs.
 - To prevent static electricity, do not touch the parts.
 - At the time of purchase, the HDD unit and canisters are packaged in exclusive cushion.
The HDD units and canisters may be damaged by fall or vibration. When transporting the unit, remove these parts from the unit and package again.

1 Install the HDD into the special canister and use the four screws to fasten both sides of the HDD.

The torque for tightening the screws is 0.49 N•m (5 kgf•cm) (use a torque driver)

HDD fixing screws for HDD canister

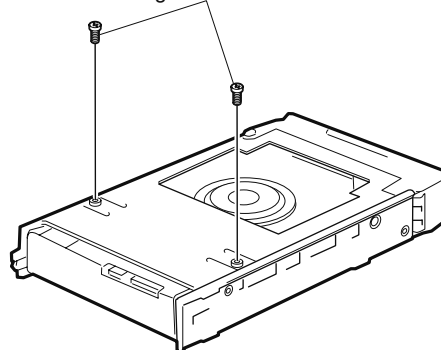


HDD fixing screws for HDD canister

2 Use the two screws to fasten the bottom of the HDD.

The torque for tightening the screws is 0.49 N•m (5 kgf•cm) (use a torque driver)

HDD fixing screws for HDD canister



Using the Front Panel for Operations

Handling the HDD

Install the HDD unit provided (page 46).
The HDDs can be easily installed or removed from the HDD bay slots inside the front cover.
Contact your dealer for information on purchasing, installing, and replacing HDDs.

Important:

- HDDs are precise devices. Note the following precautions when handling them.
 - Do not subject them to vibration or impact.
 - Before touching an HDD, ground yourself against a metal object to eliminate any static electricity. Always hold the HDDs by the sides when carrying them.
 - To prevent damage to components from static electricity, do not touch the parts or connectors on top of the HDDs.
- Contact your dealer for information on compatible HDDs.
Operation is only guaranteed with recommended HDDs.
- All the HDDs must be the same model.
Even if the capacity is the same, the space may be smaller by a few percent if the HDD models are different.
- Always install the HDDs in order starting with HDD 1.
(Disk slots in order from 1 to 9, starting on the left)
- In RAID5 or RAID6 modes, do not change the position of the HDD after starting operation.
Recorded data may not be read correctly if they are changed.

Item		Reference	Page
Installation	For individual HDD units	Installing HDDs	page 46
	For extension units*	Installing HDDs by unit	page 47
Remove	For individual HDD units	Removing HDDs	page 48
	For extension units*	Removing HDDs by unit	page 50
Mode setting	All units	Setting the HDD's Operation Mode	page 51
Replacement & recovery	In single mode	Installing HDDs Removing HDDs	page 46 page 48
	In RAID mode Error Recovery	HDD error recovery (In RAID mode)	page 52

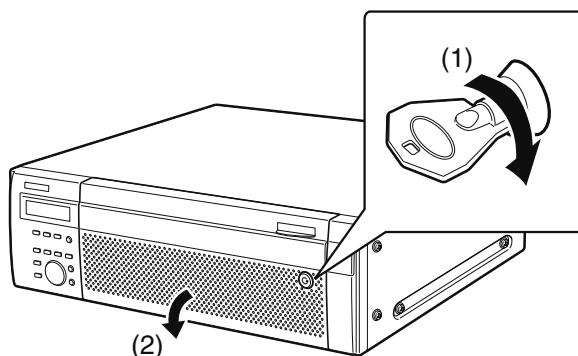
*Extension unit is required for installation as a unit.

Using the Front Panel for Operations

Installing HDDs

You can install HDDs from the recorder while it is in operation.

- 1 Insert the key (included) into the key hole and turn it to the right while pressing gently to open the front cover.

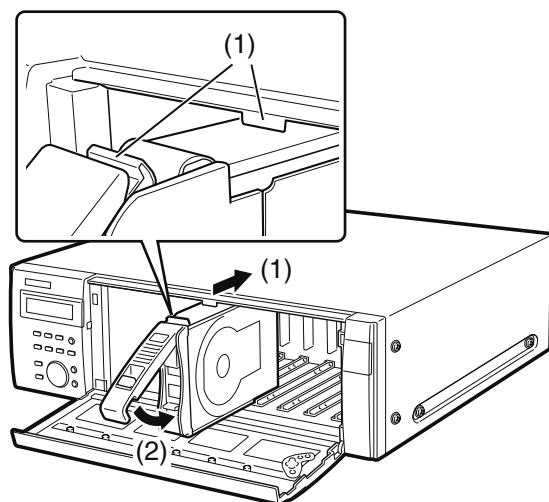


- 2 Insert the HDD units into the HDD bay slots while checking each HDD number marked on the HDD bay slots.

Press the HDD unit's removal knob down and lift the lever, and then insert it all the way into the disk slot.

- (1) Hook the HDD unit's tab securely on the HDD bay slot.

- (2) Press the lever down and push the HDD unit until the removal knob clicks.



- 3 The HDD is automatically recognized.

- While the HDD is being recognized, the HDD status indicator blinks orange. Once the HDD is recognized, the HDD status indicator lights green or blinks.
- The HDD is automatically formatted if it is not preformatted. The HDD status indicator lights green after formatting is complete.
- Preformatted HDDs are recognized for playback only. In this case, the HDD status indicator blinks green. Follow the instructions from step 4 to use the HDD for recording.

Note:

- The HDD status indicator may light green before blinking orange when an HDD is inserted.

- 4 Press the [USE] button for over 2 seconds.

A buzzer sounds.

Press the front panel buttons according to the directions on the LCD.

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- 5 Press the arrow buttons (up or down) on the front panel until [HDD Operate] appears on the screen.

HDD Operation
[SET]

- 6 Press the [SET] button.

- 7 Press the arrow buttons (up or down) on the front panel until [Link HDD] appears on the screen.

Link HDD
ACCEPT <NO/YES>

- 8 Select [YES] with the arrow buttons (left or right) and then press the [SET] button.

- 9 Select the device where you installed the HDD (Recorder: MAIN, Extension unit x: EXTx) with the arrow buttons (up or down) and press the [SET] button.

Link HDD
UNIT>MAIN [SET]

- 10 Select the device where you installed the HDD with the arrow buttons (up or down) and press the [SET] button.

Link HDD
MAIN-1 [SET]

Using the Front Panel for Operations

- 11** Select [YES] with the arrow buttons (left or right) and then press the [SET] button.

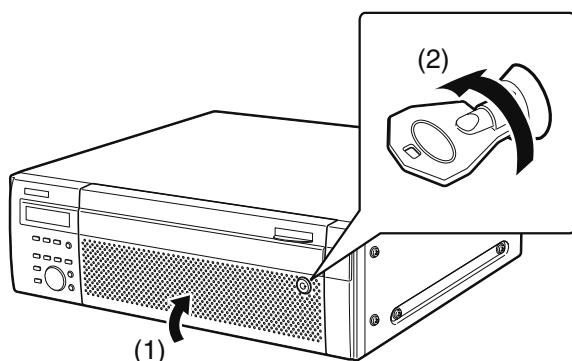
Link MAIN-1
ACCEPT <NO/YES>

The HDD is recognized for recording.

Link MAIN-1
DONE [SET]

Press the [SET] button to return to the display format screen.

- 12** Close the front cover and lock it by lightly pressing and turning the key to the left.
Keep the key in a safe place.



- 13** Check the available disk space.

Check the following content related to the HDD under [Disk information] on the settings menu. Refer to the Setup Instructions (PDF file) for more information.

- HDD capacity
- HDD remaining capacity
- Hour meter
- Disk operation mode
- Date range of video recorded on the HDD

Note:

- HDDs cannot be added while in RAID5 or RAID6 mode. The RAID function will not start even if an HDD is installed (linked) in an empty disk slot.

Installing HDDs by unit

All the HDDs in one extension unit can be linked to operate at the same time. For details refer to the operating instructions for the extension unit.

- 1** Install the HDD units in the extension unit.

Install the HDDs in the extension unit according to steps 1 to 2 in "Installing HDDs (page 46)" to install HDDs.

Repeat steps 1 to 2 to install multiple HDD units.

Note:

- When installing HDD units, each HDD unit must be recognized. (Follow Step 1 and 2)
Additional HDD units will not be recognized while the first unit is being recognized.

- 2** The HDD is automatically recognized.

- While the HDD is being recognized, the HDD status indicator blinks orange.
Once the HDD is recognized, the HDD status indicator lights green or blinks.
- The HDD is automatically formatted if it is not preformatted.
The HDD status indicator lights green after formatting is complete.
- Preformatted HDDs are recognized for playback only. In this case, the HDD status indicator blinks green. Follow the instructions from step 3 to use the HDD for recording.

- 3** Press the [USE] button for over 2 seconds.

A buzzer sounds.

Press the front panel buttons according to the directions on the LCD.

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- 4** Press the arrow buttons (up or down) on the front panel until [HDD Operate] appears on the screen.

HDD Operation
[SET]

- 5** Press the [SET] button.

- 6** Press the arrow buttons (up or down) on the front panel until [Link EXT] appears on the screen.

Link EXT
ACCEPT <NO/YES>

Using the Front Panel for Operations

- 7** Select [YES] with the arrow buttons (left or right) and then press the [SET] button.

- 8** Select the number of the extension unit where you installed the HDD with the arrow buttons (up or down) and press the [SET] button.

Link EXT
UNIT>EXT1 [SET]

- 9** Select [YES] with the arrow buttons (left or right) and then press the [SET] button.

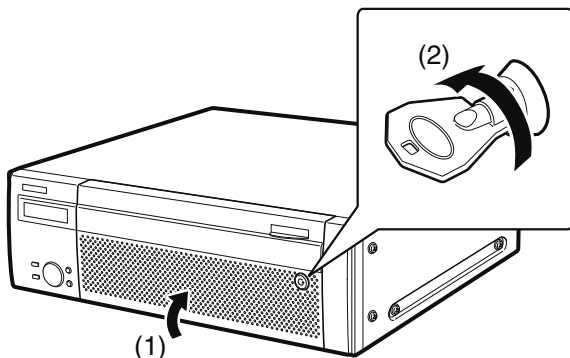
Link EXT1
ACCEPT <NO/YES>

All the HDDs installed in the extension unit are recognized for recording.

Link EXT1
DONE [SET]

Press the [SET] button to return to the display format screen.

- 10** Close the front cover of the extension unit and lock it by lightly pressing and turning the key to the left.



- 11** Check the available disk space.

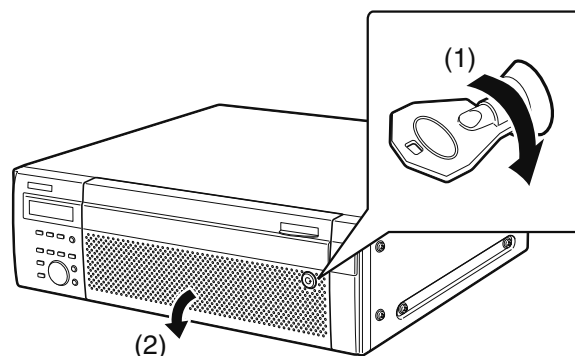
Check the following content related to the HDD under [Disk information] on the settings menu. Refer to the Setup Instructions (PDF file) for more information.

- HDD capacity
- HDD remaining capacity
- Hour meter
- Disk operation mode
- Date range of video recorded on the HDD

Removing HDDs

You can remove HDD units from the recorder while it is in operation.

- 1** Insert the key (included) into the key hole and turn it while pressing in gently to open the front cover.



- 2** Press the [USE] button for over 2 seconds.
A buzzer sounds.

Press the front panel buttons according to the directions on the LCD.

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- 3** Press the arrow buttons (up or down) on the front panel until [HDD Operate] appears on the screen.

HDD Operation
[SET]

- 4** Press the [SET] button.

- 5** Press the arrow buttons (up or down) on the front panel until [Remove HDD] appears on the screen.

Remove HDD
ACCEPT <NO/YES>

- 6** Select [YES] with the arrow buttons (left or right) and then press the [SET] button.

- 7** Select the HDD to be removed (Recorder: MAIN, Extension unit: EXT) with the arrow buttons (up or down) and then press the [SET] button.

Remove HDD
UNIT>MAIN [SET]

- 8** Select the HDD to be removed with the arrow buttons (up or down) and then press the [SET] button.

Remove HDD
MAIN-1 [SET]

Using the Front Panel for Operations

- 9** Select [YES] with the arrow buttons (left or right) and then press the [SET] button.

Remove MAIN-1
ACCEPT <NO/YES>

The HDD stop process begins and the HDD status indicator blinks orange.

The HDD status indicator goes out once the HDD stop process is complete.

- If you stop the HDD during recording, recording switches to another HDD. Images are not recorded for a few seconds while recording switches. If another HDD is not available, recording stops.

Remove MAIN-1
Ready [SET]

Press the [SET] button to return to the display format screen.

- 12** Check the disk information.

Check the following content related to the HDD under [Disk information] on the settings menu. Refer to the Setup Instructions (PDF file) for more information.

- HDD capacity
- HDD remaining capacity
- Hour meter
- Disk operation mode
- Date range of video recorded on the HDD

Note:

- You cannot remove HDDs by opening the front panel while operating in RAID5 or RAID6 mode.
- Refer to page 53 when replacing HDDs with errors.

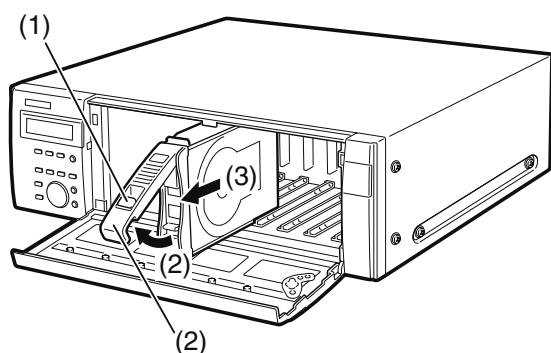
- 10** Remove the HDD unit.

(1) Press the knob on the HDD unit.

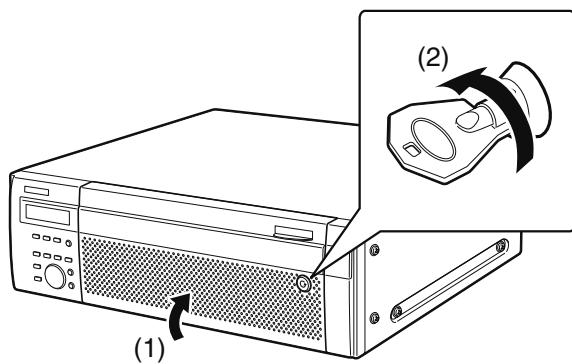
(2) Open the lever.

(3) Remove the HDD unit.

Remove the HDD carefully so you do not bump it (be careful not to drop it).



- 11** Close the front cover and lock it by lightly pressing and turning the key to the left. Keep the key in a safe place.

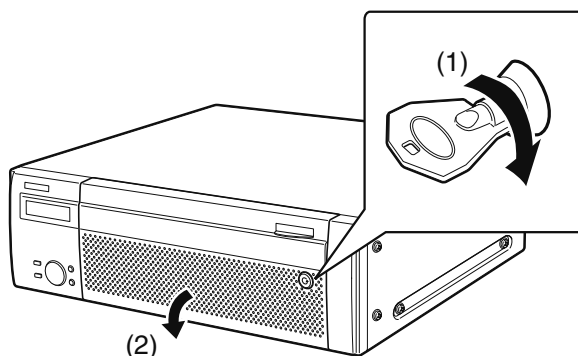


Using the Front Panel for Operations

Removing HDDs by unit

The HDDs in one extension unit can be removed simultaneously.
For details refer to the operating instructions for the extension unit.

- 1 Insert the key (included) into the key hole on the front cover of the extension unit and turn it while pressing in gently to open the front cover.



- 2 Press the [USE] button for over 2 seconds.
A buzzer sounds.
Press the front panel buttons according to the directions on the LCD panel.

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- 3 Press the arrow buttons (up or down) on the front panel until [HDD Operate] appears on the screen.

HDD Operation [SET]

- 4 Press the [SET] button.

- 5 Press the arrow buttons (up or down) on the front panel until [Remove EXT] appears on the screen.

Remove EXT
ACCEPT <NO/YES>

- 6 Select [YES] with the arrow buttons (left or right) and then press the [SET] button.

- 7 Select the extension unit (EXTx) to be removed with the arrow buttons (up or down) and then press the [SET] button.

Remove EXT
UNIT>EXT1 [SET]

- 8 Select [YES] with the arrow buttons (left or right) and then press the [SET] button.

Remove EXT1
ACCEPT <NO/YES>

The extension unit stop process begins and all the HDD status indicators blink orange.

All the HDD status indicators go off once the stop process is complete.

- If you stop the extension unit during recording, recording switches to the HDD in another device. Video is not recorded for a few seconds while recording switches. If another HDD is not available, recording stops.

Remove EXT1
Ready [SET]

Press the [SET] button to return to the display format screen.

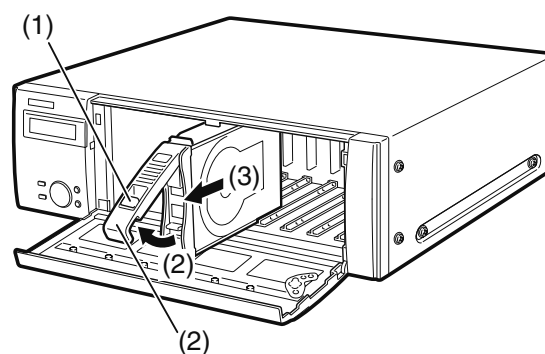
- 9 Make sure that all the HDD status indicators on the extension unit are out and then remove the HDD unit.

- (1) Press the knob on the HDD unit.

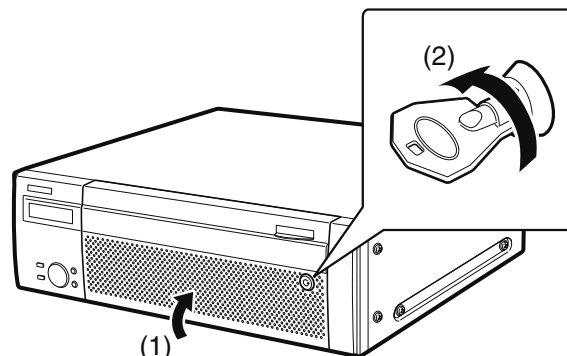
- (2) Open the lever.

- (3) Remove the HDD unit.

Remove the HDD carefully so you do not bump it (be careful not to drop it).



- 10 Close the front cover of the extension unit and lock it by lightly pressing and turning the key to the left. Keep the key in a safe place.



Using the Front Panel for Operations

11 Check the disk information.

Check the following content related to the HDD under [Disk information] on the settings menu. Refer to the Setup Instructions (PDF file) for more information.

- HDD capacity
- HDD remaining capacity
- Hour meter
- Disk operation mode
- Date range of video recorded on the HDD

Note:

- You cannot remove individual HDDs by opening the front panel while operating in RAID5 or RAID6 mode.
- Refer to page 53 when replacing HDDs with errors.

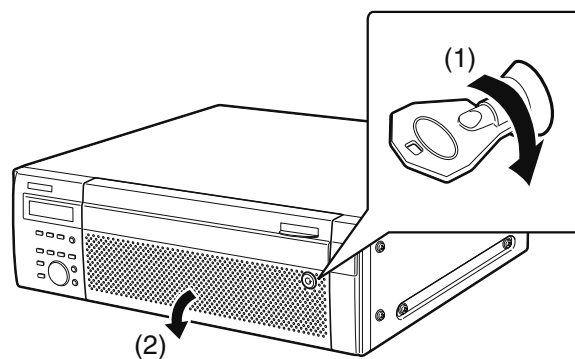
Setting the HDD's Operation Mode

Sets the HDD operation mode.

The initial setting is set to [SINGLE mode].

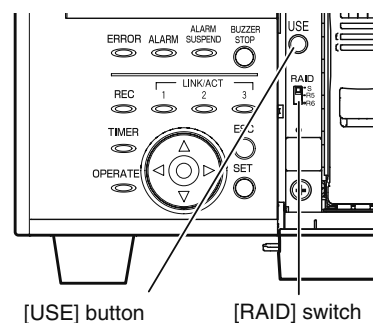
This setting is not necessary to use the single mode as it is set up.

- 1 Turn off the recorder.**
Turn off the power according to "Turning Off the Power (page 39)".
- 2 Turn on any extension units first if any are connected.**
- 3 Insert the key (included) into the key hole and turn it while pressing in gently to open the front cover.**



- 4 Sets the operation mode with the [RAID] switch.**

- S : SINGLE mode (default)
R5 : RAID5 mode
R6 : RAID6 mode



- 5 Hold down the [USE] button and turn on the power to boot up.**
 - The settings are enabled at bootup. Continue to press the [USE] button until the buzzer sounds.

Important:

- The HDD operation mode cannot be changed once the system is operating. Recorded data may not be read correctly if the mode is changed after the system is operating.

Using the Front Panel for Operations

HDD Error Recovery (During RAID Operation)

When errors occur during RAID5 or RAID6 operation, the HDD errors in the following table are displayed.

When one HDD has errors ([1down]) in RAID5 mode, the data on the remaining HDDs can be read and recovery is possible.

When two HDDs have errors ([2down]) in RAID6 mode, the data on the remaining HDDs can be read and recovery is possible.

When any errors occur on an HDD, replace the effected HDD as soon as possible.

For details refer to the operating instructions for the extension unit.

*Contact your dealer for information on replacing HDDs.

Important:

- RAID5 mode
Data cannot be recovered when two or more HDDs have errors ([2 down]) or when an HDD has errors during recovery.
- RAID6 mode
Data cannot be recovered when three or more HDDs have errors ([3 down]) or when an HDD has errors during recovery.

Data source		During HDD error (malfunction)	During recovery
Recorder/ Extension unit	LCD	• RAID 1 DOWN: [1down] • RAID 2 DOWN: [2down] • RAID 3 DOWN (only while in RAID6 mode): [3down]	Note: • Only extension units are shown.
	HDD access indicator	Lights red: Errors have occurred on HDD (Data can be recovered by replacing the HDD) • When in RAID5 mode, the first HDD has errors • When using RAID6, the first two HDDs have errors Blinks red: Errors have occurred on HDD (Data cannot be recovered even if HDD is replaced) • When in RAID5 mode, the second HDD has errors • When in RAID6 mode, the third HDD has errors	Alternating orange/red HDD being recovered in RAID5/RAID6
Recorder	[Error Log] Refer to the Operating Instructions (PDF file) for more information.	• RAID 1 DOWN Recorder: MAIN RAIDm 1 DOWN Extension unit: EXTu RAIDm 1 DOWN • RAID 2 DOWN Recorder: MAIN RAIDm 2 DOWN Extension unit: EXTu RAIDm 2 DOWN • RAID 3 DOWN Recorder: MAIN RAID6 3 DOWN Extension unit: EXTu RAID6 3 DOWN m: Operational mode u: Unit number	RAID recovery failure • Recorder MAIN RAIDm RECOVERY FAILURE • Extension unit EXTu RAIDm RECOVERY FAILURE m: Operational mode u: Unit number

Using the Front Panel for Operations

Replacing Faulty HDD during RAID Operation

When one HDD errors ([1down]) in RAID5 mode, the data on the remaining HDDs can be read and recovery is possible.

When two HDDs errors ([2down]) in RAID6 mode, the data on the remaining HDDs can be read and recovery is possible.

Important:

- Do not turn off the power until RAID is recovered. Data recovery may not be done normally when the power is turned off.

Note:

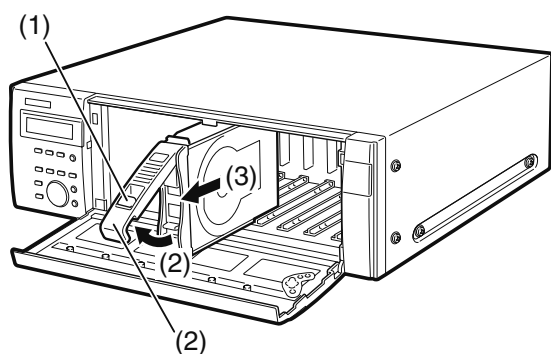
- When errors (1down) occur in RAID6 mode, quickly execute error recovery.

MAIN ERR
RAID5 1down

MAIN ERR
RAID6 1down

- Replace units that have an HDD access indicator that lights or blinks red.

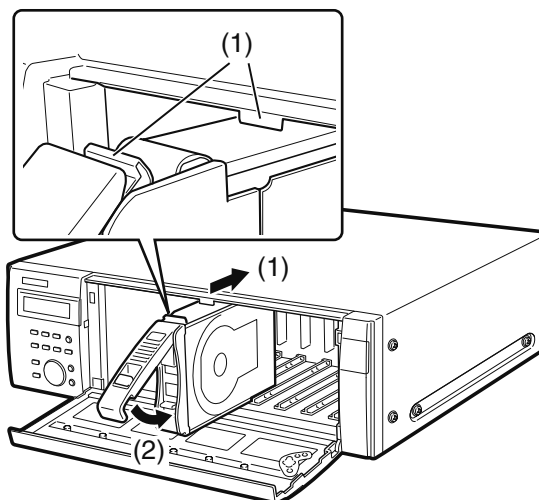
- Press the knob on the HDD unit.
- Open the lever.
- Remove the HDD unit.
Remove the HDD carefully so you do not bump it (be careful not to drop it).



- Use the HDD numbers for the HDD bay slots as a guideline when inserting the new HDD unit into the empty slot.

Press the HDD unit's removal knob down and lift the lever, and then insert it all the way into the disk slot.

- Hook the HDD unit's tab securely on the HDD bay slot.
- Press the lever down and push the HDD unit until the removal knob clicks.



- The HDD is automatically recognized and recovery starts. When recovery starts, the HDD access indicator blinks orange and red.

- When errors are recovered, the HDD access indicator goes off or lights green.

When two HDDs have errors in RAID6 mode, data recovery of the second HDD starts after the first HDD.

Using the Front Panel for Operations

Rebooting

Press the [SET] button on the Manual Reboot screen to display the Manual Reboot ACCEPT screen. Select [YES] and press the [SET] button to reboot.



Troubleshooting

Problems

Before requesting service, check the following items. Contact your dealer if the problem does not appear here, if the problem is not resolved by these remedies, or if you have any questions about settings and installation.

Problem	Check item/remedy	Page
Power is not turn on.	Make sure that the power plug is firmly connected to the electric outlet.	-
	Make sure supplied power cord is firmly connected to the equipment.	page 39
Alarms are not activated.	Check if signals are input to the alarm/control connectors and alarm connectors on the rear panel.	page 32 page 36
	Check if the alarm connectors are correctly set.	page 38
The [ERROR] indicator lights orange. Temperature is too high, stop operation as soon as possible.	Fan has malfunctioned and stopped. Contact your dealer.	-
	Make sure that nothing is blocking the vents in front or the fan on the rear.	page 9
	Internal temperature is too low or too high. Install the product within the ambient operating temperature.	page 9
	When the [ERROR] indicator lights orange, the internal temperature may be high. Make sure that dust has not collected on the vents.	-
Extension unit is not recognized. (When an extension unit is connected)	Make sure that the cable provided with the extension unit is being used.	page 31
	Make sure that the connection cable is not loose.	page 31
	Was the extension unit turned on before the main unit? Reboot the system and turn on the extension unit first.	page 39
	If you are using a breaker or other system to turn on the power to the entire system simultaneously, make sure that all the devices are connected to the same power source.	-
	If you are using UPS (uninterrupted power supply), connect all the devices to the same UPS.	-
HDD is not recognized. The HDD status indicator does not light.	Make sure the HDD unit is firmly inserted into the disk slot.	page 46
	Have you insert another HDD unit while the first unit was being recognized? Remove the unrecognized HDD unit and try again.	page 46
	HDD has errors.	-
HDD status indicator lights, but HDD is not recognized.	Link the HDD again.	page 46
HDD indicator lights or blinks red	Make sure that the HDD units are installed in order from HDD 1 to 9. Surely install the HDD units in order starting with HDD 1.	page 46
	HDD has troubles in RAID5/RAID6 mode. The indicator of the first HDD with error lights, and the indicators of other HDDs with errors blink.	page 53

Troubleshooting

Problem	Check item/remedy	Page
Cannot recover data after replacing HDDs (In RAID5/RAID6 mode)	Make sure the HDD unit is firmly inserted into the disk slot.	page 53
	The HDD you are trying to recover data from has errors.	-
	Make sure that the capacity of the replaced HDD is not smaller than the original HDD. Even if the capacity is the same, the space may be smaller by a few percent if the HDD models are different. All the HDDs must be the same model. Also, use a replacement HDD that has equal or greater capacity than the original.	page 45
HDD indicator lights orange and red alternately even though recording or playback is not done.	Make sure that data is not recovered in RAID5/RAID6 mode.	page 52
The power cord insulation is damaged.	The power cord, AC inlet or the power plug is damaged. If you continue to use it, a fire or an electric shock may occur. Unplug the power cord immediately, and refer servicing to qualified service personnel.	-
The power cord, AC inlet or the power plug are hot during use.		-
The power cord gets warm or hot if bent or pulled during use.		-
[EXTu ERR INITIAL ERR] is displayed on the LCD. u: Unit number	After the extension unit is initialized, reconnect the extension unit.	Installation Guide for expansion units

Specifications

WJ-ND400

● General Specifications

Power source	NTSC model: 120 V AC, 60 Hz PAL model: 220 V - 240 V AC, 50 Hz	
Power consumption	170 W	
Ambient operating temperature	+5 °C to +45 °C {41 °F - 113 °F}	
Ambient operating humidity	5 % to 90 % (non condensing)	
Maximum operating altitude	2 000 m {6 562 feet} above sea level	
Dimensions	430 mm (W) x 132 mm (H) x 400 mm (D) {16-15/16" (W) x 5-3/16" (H) x15-12/16" (D)} (excluding rubber feet and projections)	
Weight	When 1 HDD is installed	14 kg {30.9 lbs}
	When 9 HDDs are installed	20 kg {44.15 lbs}

● HDD (One HDD is provided at the factory. Contact your dealer to purchase additional HDD.)

HDD	3.5" HDD x 1 (Up to 9 HDDs)
Type/function	RAID5 mode available (only when 3 or more HDDs are installed) RAID6 mode available (only when 4 or more HDDs are installed)

● Input/output

External storage	High-speed serial interface, 1.5 Gbps (theoretical value), x5
Alarm/Control connector	Alarm input 8-16 ^{*1} , Network error output ^{*2} , Alarm reset input ^{*1} , Emergency recording input ^{*1} , Available disk space warning output ^{*2} , HDD error output ^{*2} , Camera error output ^{*2} , Error output ^{*2} , Power outage recovery completion output ^{*3} , Time adjustment input/output ^{*4} , Alarm output ^{*2} , Alarm suspension input ^{*1} , Power outage detection input ^{*1} , External recording mode switching ^{*1} , +5 V output ^{*5} (D-sub 25-pin)
Alarm connector	Alarm input 1-7 ^{*1} , Alarm input 17-32 ^{*1} (D-sub 25-pin)
Client PC port	10BASE-T/100BASE-TX/1000BASE-T (RJ-45)
Camera port	10BASE-T/100BASE-TX/1000BASE-T (RJ-45)
Maintenance port	10BASE-T (RJ-45)

- *1 No voltage make contact input +5 V pull-up, 150 kΩ
*2 Maximum output of open collector is DC 24 V, 100 mA
*3 High (+5 V to +12 V, max. 6.3 mA)
*4 52 kΩ +5-V pull-up, output current -100 mA, no voltage make contact input
*5 Max. 200 mA

Accessories

Standard Accessories

- CD-ROM 1 pc.
 - Installation Guide (this book)..... 1 pc.
 - Quick Reference Guide 1 pc.
 - Warranty (Only for NTSC model) 1 pc.
- * The CD-ROM contains the operating instructions (PDFs).

The followings are for installation:

- Hard disk unit..... 1 pc.
- Power cord (NTSC model) 1 pc.
- Power cord (PAL model) 2 pcs.
- Key 2 pcs.
- Label..... 1 pc.
- Rack mounting brackets 2 pcs.
- Rack mounting brackets fixing screw 6 pcs.
- Handle for rack mounting bracket..... 2 pcs.
- Handle fixing screw for rack mounting bracket..... 4 pcs.
- Washer 4 pcs.
- HDD canister 8 pcs.
- HDD fixing screw for HDD canister 48 pcs.

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Information for Users on Collection and Disposal of Old Equipment and used Batteries



These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.

For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC and 2006/66/EC.

By disposing of these products and batteries correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.

For more information about collection and recycling of old products and batteries, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.



For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

[Information on Disposal in other Countries outside the European Union]

These symbols are only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.



Cd

Note for the battery symbol (bottom two symbol examples):

This symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.

For U.S., Canadian and Puerto Rican fields:

Panasonic System Solutions Company,
Unit Company of Panasonic Corporation of North America
www.panasonic.com/business/
For customer support, call 1.800.528.6747
Three Panasonic Way 2H-2, Secaucus, New Jersey 07094

Panasonic Canada Inc.
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3 Canada (905)624-5010
<http://www.panasonic.ca>

Panasonic Sales Company
Division of Panasonic Puerto Rico Inc.
San Gabriel Industrial Park 65th Infantry Ave. KM. 9.5
Carolina
P.R. 00985(809)750-4300

For European and other fields:

Matsushita Electric Industrial Co., Ltd.
Osaka, Japan
<http://panasonic.net>

Importer's name and address to follow EU rules:

Panasonic Testing Centre
Panasonic Services Europe GmbH
Winsbergring 15, 22525 Hamburg F. R. Germany